COTTON

Volume LXXVIII
Number Five
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MARCH, 1914

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Dalton and Atlanta, Ga.

To Reduce Weaving Costs

Straight Saw-Cut
Threader Eye is simply a bushing screwed into position
Improved Throat Construction of recent design makes Shuttle the strongest hand threader made
All Split Spindles carefully tempered and of extra durability
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Patent Protecting Staple prevents splitting of Shuttle at Spindle End
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USE SHAMBOW HAND THREADING SHUTTLES

WITH IMPROVED MARBLE SPINDLE

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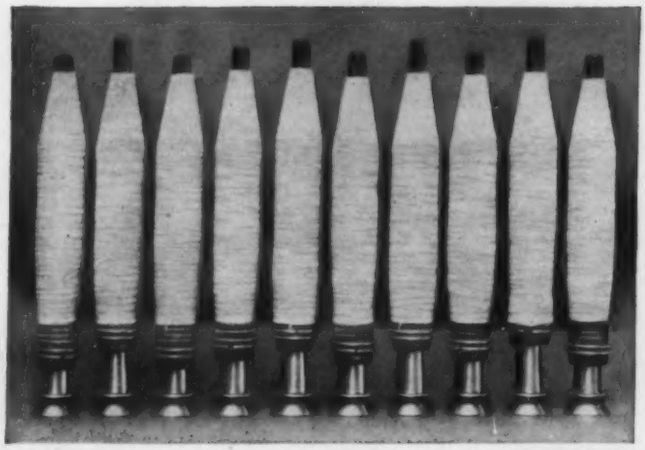

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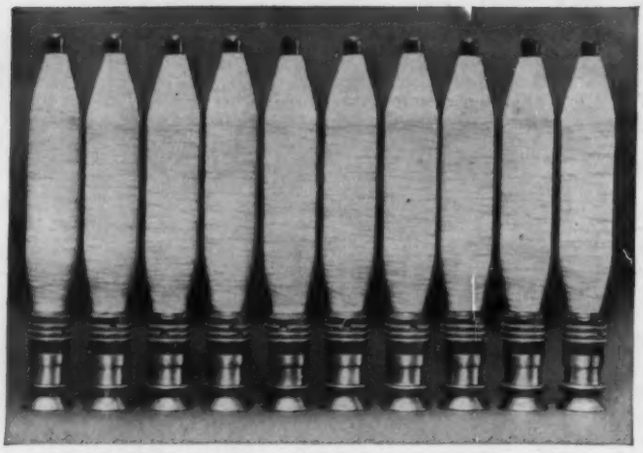

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THE REAL TROUBLE.

Under the heading, "Jobs and Jobless," *The Public*, (Chicago), makes the following statement: "Much is said during the commercial solstice regarding the man out of work. During the summer when enterprises in the open are under way, and when hoboing is a pleasant diversion for the indolent, the question of the unemployed is of comparative insignificance. But cold weather stops field work, and it drives the hobo to his haven, the city, where organized charity assumes the role of a special Providence. It is then that the problem of the unemployed bulks large in press, pulpit and settlement house."

After making this assertion it continues to discuss the unemployed and some of the reasons therefor and finds that age and a lack of physical ability are two of the contributing causes. It also hints at a remedy, but—that is beside the issue at present. The paragraph quoted holds our attention, especially the statement, "But cold weatheer stops field work and it drives the hobo to his haven, the city." This statement implies that the bulk of a city's winter time poor are largely seasonal field workers and "hobos." Webster defines a "hobo" as a vagrant workman; a tramp. Those familiar with the true genius hobo know that the winter time trend is southward, where the wandering wayfarer may at least be certain of more salubrious climatic conditions.

According to a survey of the city of New York made by the Employment Bureau of the Society for Improving the Condition of the Poor, and published in the New York *Evening Sun* of February 2nd, 1914, over 331,000 unemployed were found and listed. Of this number 140,000 were unskilled laborers. One of the largest employers of skilled labor in the city is quoted as saying that "The applicants for positions are far more numerous this year than last and men offer their services for almost nothing in order to exist and keep their homes."

These men are not "hobos." The larger part of New York's unemployed are skilled wage earners. Many of the unskilled laborers, as well as the skilled workmen, were members of unions, but while in certain trades a slightly larger per cent of non-union men were found unemployed, the variation was not striking.

This industrial depression in the north has endured only a few months, but more than 300,000 wage earners are seriously affected in New York City alone. Why? Because these family heads, these home makers, are forced to spend their entire earnings in order to live decently. Again the question, why? This time the answer rubs against the workers, against the wage earners, some of these same unemployed, who have, as members of labor unions struck for higher wages, the closed shop, and also urged the passing of laws reducing the length of the working day, prohibiting women and children from employment except under certain restrictions, and sometimes not at all. The

law of diminishing return is at work. The shorter the hours of labor and the higher wage per hour are being constantly reflected in the higher cost of the necessities of life. It is an endless chain whose effects are felt even unto the uttermost parts of the country.

The striking workmen of a certain class may not note the increase in the cost of the particular product of which their labor is a part. However, they not only receive less of this product per unit of money themselves, but every other person using this product is also affected by this diminishing return. A strike of the building trades for example, means, if successful, more expensive office buildings, higher rents, followed by higher charges on the part of the professional men occupying those offices. These higher rates, which simply mean less service for a certain unit of money, are passed along until they reach every wage earner in the land. It is an endless chain whereby the increased wages or the shortened hours of the few has to be paid for by the people as a whole.

Add to this diminishing return per unit of money, the diminishing income per family caused by the drastic labor laws for women and children already enacted in some states and before the legislatures of others, and it at once becomes evident why a slight industrial depression is so quickly reflected by hardships among the unemployed.

SOME EXECUTIVE THOUGHTS ON THE HUMAN NATURE DEPARTMENT.

The "Human Nature Department" discussion, which began in the September, 1913, issue, has assumed a considerably wider scope than that originally outlined. Many opinions have been expressed by mill and textile school officials, and it is with much satisfaction that we present this month some letters from men inside of the mill on this important subject. Several of these will be found on pages 223-24, from successful overseers of many years experience. Another, which follows, is from GEORGE S. HARRIS, superintendent of the Lanett Cotton Mills at West Point, Ga.:

EDITOR COTTON:

"The five pages of your January number of COTTON headed 'Should Textile Schools Have a Human Nature Department' are very interesting reading. It is particularly interesting to note that the contributors, including presidents, treasurers, a machine shop superintendent, one mill agent and several textile school directors, not only take variable viewpoints of the subject under discussion, but offer a discussion of the general training of the textile students, and it is this that I consider very important. I regret that the contributors did not include more men who have spent their lives in direct contact with the inside of the mill, because it is these men who must be best qualified to answer the question.

"Having had training at the Georgia School of Technology, and afterwards completed the course of cotton manufacturing at the Lowell Textile School, I feel that I might in a measure answer this question.

"There is no doubt about the great good being accomplished by our textile schools, and before advancing further I would have your readers thoroughly understand my position on this, but I believe that the efficiency of the schools would be materially advanced if the principals would advise more mill experience. It is folly for any to believe that they can send a boy to a textile school and that his diploma is all that is necessary. This will never be true, even with all the human nature departments or any other departments that might be added. However, this false impression is prevalent, not only among the guardians of the students, but among the students themselves. I recall an instance that impressed me while at the Lowell Textile School. During shop practice hour one day a bolt that we were trying to use on a machine proved to be too long. When I returned to school after noon I carried with me my hack saw, and you, like I, would have been surprised to see the wonder at a hack saw. A large part of the class had never seen a saw that would "saw" a piece of steel; yet less than two years later those same students were graduated as cotton spinners. This is not mentioned with any intentional reflection on the school, as I believe the Lowell Textile School is better fitted today to train textile students than any in the country, but it is offered to show how far all of them are apt to miss their desired mark. I recall my first introduction to Prof. Humphries, who was then head of the cotton department. He told me as I was about to start my course that the school did not and could not teach me to 'run a mill,' but would endeavor to teach me how to 'learn to run a mill,' and it is in this that the schools do the most good.

"It is difficult to place a fair estimate on the value of a correct knowledge of the *human element* in the management of a mill, but no one will refute that such knowledge is the first essential to a successful manager. Many men with this knowledge and practically no knowledge of textile mechanics have been fairly successful as mill managers, but I have never seen a man yet very successful without this essential characteristic, regardless of what he may know about drafts, twists, cloth constructions, or whatnot. You will note my reference to characteristic, as I consider that this is a characteristic born in the man, very much more than an ability that can be acquired by study. By proper training the ability to cope with the human element can be developed, but I would place little stress on any lectures that might be given the student, though a little of this sandwiched into his school course might be helpful. The lecturer might throw out some points, but after all had been said and done in the Human Nature Department it would be well to tell the graduate that he can now go out and 'learn to manage a cotton mill.' I do not feel on this matter as did a very successful mill agent in the South, who once said that a textile school graduate was of no use to the mill until he had unlearned all he had learned at the school. As a graduate of a textile school, I know from experience that my school work has been of great value and has enabled me to do what I never could have done had all my years of formation been spent inside a mill. It is the broad view of the industry and the ability to study out problems that count most in the school work.

"During the past several years I have had the pleasure of assisting several students through their mill apprenticeship, and I can safely say that those with textile school training advance ahead of those without it in direct proportion to the amount of school training they have had. But when each individual reaches the point of taking charge of a section, becoming a second hand, or an overseer, it is then that the natural characteristic—that ability to handle men, to unconsciously hold the respect of men—

plays so important a part as to either insure his success or prove him to be a failure.

"While there are exceptions to every rule, it is safe to say that the young man who wants to picture himself a successful cotton manufacturer had best make plans to give himself several years' good, hard work in the mill, and I advise two or three years, previous to taking up his textile school work. The difficulty in this is that when he arrives at the school he must enter a class with boys who never saw a saw that would saw steel. The courses today are made to fit these never-saw-a-saw boys, and the fellow who has had the mill experience is held back while he could progress very much faster. Also, the boy who has never worked and known what it is to stand 'in line' on pay days does not generally appreciate the textile school lecturer, and previous mill training would necessarily make his years at 'Textile' very much more valuable.

"Since some of the very able contributors in the January COTTON mention Ideals, I would plan here an ideal course for the young man who is destined to direct one of our mills.

"After graduating from his local high school at, say, sixteen years of age, I would place him in a technological school for two years. At the age of eighteen he has acquired fundamentals in physics, chemistry and mechanics. He has also filed a block square in the machine shop, made all kinds of mortised joints in the wood shop, learned what is really happening when coal combines with oxygen chemically in a firebox, and, most important of all, begins to find himself.

"At the end of his second year at 'Tech, I would put him in a mill on his own time. Help the old man feed the hopper, and when the old man 'catches up,' our young man will be given his first lecture on human nature. It is these valuable lectures that he will remember in years to come. He will learn to feel as these people feel when he, in after years, must necessarily move out of their realm. During the next two years he will learn what it means to 'make the whistle,' to eat from a dinner pail, and ten thousand things which are not taught and never will be taught in textile schools. After a few months our young man begins to apply his fundamental ideas in chemistry, physics and mechanics to the steam plant which he has been watching, or to the differential in behind the roving frame, which very probably his overseer cannot explain to him. All of this time he is learning the viewpoints of the card strippers, frame tenders, etc., in matters which the mill managers are handling. The superintendent orders changes, and this young man down in the mill feels with the help.

"At the age of twenty, when he is probably a second hand somewhere, enter him in a good textile school to begin a two years' course. Now, the school is the problem today, and, with all due respect to our schools, I must shift here to an idealist. The class must be made up of young men who have had the equivalent experience and training; the instructors must not only be textile graduates, but successful manufacturers, and the school should be located in a large cotton mill center. In other words, our young man must not be held back by a class of 'never-saw-a-saw' boys; he hasn't time at his age to listen to doped-out lectures and spend hours every day writing a lot of matter that is probably Greek to some of his classmates, very likely just out of high school, and he should be, by all means, in a textile atmosphere.

"At the age of twenty-two he has two years at 'Tech,' with his summer months in a machine shop; two years in a cotton mill, and two years at a textile school, with summer months back in the mill. He should then be placed as overseer in a small mill and let alone. If the textile school could meet these ideals, our young man would be a corker, but, unfortunately, this is impossible today. In the first place, the school cannot pick their material for students, and neither can they pick their material for instructors. In the future it might be different, but it is a rare manufacturer who would be also a good instructor, and a textile school with successful manufacturers in every department would have some pay roll to make up.

"To my mind the Human Nature Department is certainly a step in a good direction, but this can best be accomplished by encouraging the student to spend more time in the mill before starting textile, and, when he graduates, tell him he has been shown a broad view of what the industry includes, a wide scope of fabrics, 90 per cent of which he may never make, and a general knowledge of the whole, all going to fit him to go out and learn to 'run a mill.' His mill experience teaches him to work, and if he doesn't learn this lesson, he is now and always will be a misfit, and 'Daddy' will waste money sending him to a textile school."

BECOMES TEXTILE DIRECTOR.

Henry D. Martin, the well-known superintendent and writer of textile books, who was general superintendent of the mills of the I. E. Palmer Company, of Middletown, Conn., for one year, has been engaged by the Connecticut State Board of Education as Director of the textile department of the Connecticut Trade School, started in Putnam, and began his duties February 1st. Mr. Martin resigned his position with the I. E. Palmer Company in December, 1913, and upon retiring January 1st, the employees of the Center Street Yarn Mill presented him with a shaving set, and he also received a traveling bag and toilet set, from the employees of the Arrowonna Mills, showing the high esteem with which he was held by the operatives.

Mr. Martin, who is a frequent contributor to COTTON, was born in the town of Salisbury, Conn., November 15th, 1865. In 1879 he started to learn the cotton manufacturing business in Williamstown, Mass., and has devoted his life to the business, always taking a deep interest in the economic developments of the trade. He is the author of two books, "Progress and Profit for Mill Men," and "Management of Cotton Mills," which have been widely distributed.

Mr. Martin has had charge of some of the leading mills in the New England states, the South and Canada, and is credited with being a past master in the art of managing a cotton mill, having passed through every department—from the bale to the case. He is of a practical turn of mind and a practical manufacturer of a large variety of cotton goods. We might add in passing that he has invented several devices for spinning frames. He is a member of the National Association of Cotton Manufacturers. In his new position he can do a world of good for his native state as well as for his chosen industry.

ANOTHER COTTON MILL Y. M. C. A. BUILDING.

The Ware Shoals Mfg. Co. have erected a fine new brick building for the promotion of general welfare in the community. The management of this work has been placed in the hands of the Industrial Department of the Young Men's Christian Association. The name "Kathrine Hall Y. M. C. A." has been given this association and building, in honor of little Kathrine, daughter of President Benjamin Riegel, of the Ware Shoals Company. This is the twenty-fourth cotton mill community that the Y. M. C. A. is serving in the Carolinas.

The building, as shown in the illustration, is commodious, substantially and artistically built, and well suited to the four-fold program of the Young Men's Christian Association. It is equipped with social and recreational rooms, reading and library rooms, auditorium with a seating capacity of 500, gymnasium, locker and shower bath rooms, special room for boys, bowling alley quarters, kitchen and banquet hall, class rooms, complete lodge hall accommodations, and with plenty of closets and anterooms. The cost of the building was $35,000.

The auditorium is of latest style and equipment, inclined floor, opera seats, indirect lighting, commodious stage, with curtains, scenery and dressing quarters; also a fireproof moving picture booth. The furniture is of first quality and is being added as rapidly as possible. This equipment, when complete, will cost about $6,000.

Ware Shoals has a population of 2,200, about 800 of which are employed by the mill company. The large union church was built by and is largely maintained by the management, as is the school budget.

H. W. Owen has been elected secretary of the Young Men's Christian Association. He comes from Kannapolis, N. C., where for three years he did successful work as secretary of the Kannapolis Y. M. C. A. Under Mr. Owen's leadership the Kathrine Hall Y. M. C. A. is destined to be one of the best in the list of mill associations.

The opening of the building drew a full capacity attendance. The people were much interested and appreciative. The 150 men and boys subscribing to membership the opening night indicate this. At the time of writing 203 paid members are reported.

The following men were appointed to act as a temporary Board of Directors until a permanent board could be elected: W. C. Cobb, President; A. T. Briggs, Vice-President; R. S. Oliver, Recording Secretary; G. M. Boland, Treasurer; R. C. Pinson, R. F. Bagwell, P. P. Mitchell, W. B. Guy.

The work as organized is going nicely. As soon as possible the various social, physical, educational and religious activities will be established. The reading and social privileges, games and baths are attracting an increasing number. The Lyceum and other entertainments are well supported. The boys are anxious to get into the gymnasium, and as soon as the apparatus comes regular classes will be started.

Associated in this work with President Benjamin Riegel are James MacEnroe, Assistant Treasurer, and Superintendent W. C. Cobb. The Ware Shoals Mfg. Co. and its efficient management are to be congratulated on this new welfare addition.

"KATHRINE HALL," THE NEW Y. M. C. A. BUILDING AT WARE SHOALS, S. C.

AMERICAN COTTON MANUFACTURERS' CONVENTION.

The annual convention of the American Cotton Manufacturers' Association, which, as announced, will be held in New York, will have for its headquarters the Waldorf-Astoria Hotel. The dates of the meeting are May 26 and 27. Preparations are being made for an unusually attractive gathering. Program announcements will be made later. It is rumored that a strong effort is to be made to bring the next convention to Atlanta.

Mark your calendar for the Southern Textile Association Convention at the Isle of Palms, June 12th and 13th. Everyone and his wife will be present.

The cities and towns of the South have been modernized, and among them are great centers of industry, commerce and education, and all are growing rapidly.

AMERICAN TRADE RELATIONS WITH THE NEAR EAST

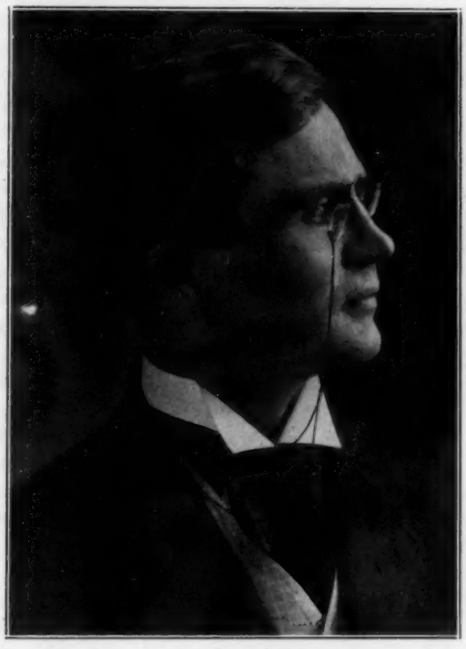
What Commercial Intercourse Has Done for This Ancient Section of the World—Will Asia Lead in Twentieth Century Commercial Advancement—An Interesting Array of Statistical Facts.

BY GABRIEL BIE RAVNDAL, AMERICAN CONSUL AT CONSTANTINOPLE, TURKEY.

Two salient facts of the fifteenth century were the discovery of America by Columbus and the conquest of Constantinople by the Turks.

America's discovery, following in the heels of the discovery of a sea route to India, drew the attention of the world westward, and the countries of the Mediterranean which had constituted the world's stage for centuries drifted into oblivion and decay. So that, in time, the caravan routes of the Near East became the pastures and sheep folds of predatory Bedouins and Kurds, and the ships of the nations forsook the ports of the Levant.

Ultimately the pendulum began to swing backward. The Suez Canal was opened, and soon attracted numerous vessels under numerous flags to its placid waters. Eastbound railroads were built, seeking outlets, first at Marseilles, then at Brindisi, then at Salonica and Constantinople, then at Vladivostok and Port Arthur. It is only a question of a few years when the Constantinople-Persian Gulf railroad will be completed, and the railroad systems of India and Indo-China connected with those of the Russians in the Trans-Caspian regions and of Egypt and South Africa. An almost startling shifting of scenes!



HON. GABRIEL BIE RAVNDAL.

Is it likely, forsooth, as predicted, that the twentieth century will belong to Asia? You are familiar with the ascendancy of Japan. You know what is happening today in China. India is astir. What about Western Asia and the countries washed by the Eastern Mediterranean?

Permit me to tell you—who still cling to the fatal theory of *an unchanging and unchangeable East*—that a wonderful transformation is taking place out there. It is like the winning of the West—the irresistible onward march of civilization.

In our country we conquered the virgin hunting grounds of the Indians. In the East they are reclaiming vast wilds which in earlier ages crowded the pages of history for hundreds of years, and which subsequently lay fallow long enough to become practically virgin once more.

In spite of its hoary antiquity the Near East today is a *new country*, unfolding more or less—as did the Louisiana Purchase regions a generation or two ago—a new country exceedingly, surprisingly rich in natural resources untapped, requiring every contrivance that modern ingenuity has devised for its advancement.

The time was when the Arabs led the world in literature, art and science. The lands of the rising sun possibly may be called upon to lead again. But before such a contingency can arise there is before these peoples of the East a busy period, not only of reconstruction of institutions of the past, but also of efforts upon efforts to catch up with occidental progress.

Can they do it? Will they do it? Most assuredly they will try. There is no question about it. You can no more arrest this evolution in the East than you can check the current of the Mississippi with water lilies.

Port Said, Egypt, fifty years ago, was a small Arab encampment; now it has 50,000 inhabitants. Piræus, the port of Athens, in 1830 counted only a hut; in 1870 the population numbered 11,000; it is now 80,000. Mersine did not exist in 1832, when Ibrahim Pasha's fleet anchored in the roadstead; it now has a population of 22,000, and is the railway terminus of the line to Adena. Beirut, the chief seaport of Syria, in 1780 had 6,000 inhabitants, in 1860 about 25,000, in 1885 some 100,000, at present more than 150,000. Gaza, a Mediterranean port, forty-eight miles southwest of Jerusalem, in 1840, had a population of 2,000, which in 1887 had grown to 16,000; in 1897, to 35,000; in 1907, to 48,000. These figures I collected four years ago. Since then the advance movement has been still further accentuated.

They have had land "booms" in Egypt within recent years, matching those which we used to experience while I lived in Dakota, in early days.

Four years ago they adopted a constitution in Turkey. It was a movement from within, an Ottoman undertaking.

At the outbreak of the present war, Turkey was busy building hundreds of miles of railway and thousands of miles of road. Turkish state revenues were steadily growing, and Ottoman statesmen were seriously discussing the possibility of a budget making both ends meet. The day actually seemed near when in Turkey there would be a bud-

*Extracts from an address before the National Business League of America.

getary equilibrium without recourse to foreign loans for current expenses.

I am not a prophet, nor a son of a prophet, but I dare say without fear of contradiction that things are changing in the Near East—changing rapidly and radically—and that this process is not artificial, but indicative of an awakening of the Near Eastern nations along the lines of the renaissance in the Far East, which has so profoundly impressed the western world.

When our missionaries first came to Beirut in 1823 that city could not boast a single window pane except in the house of the British consul. Beirut of the present age has modern palaces, colleges, newspapers, post and telegraph services and street lights. Twenty-five years ago there was not a single carriage in Beirut, and the ladies made their afternoon calls mounted on donkeys. Today there are 600 licensed victorias in Beirut, besides numerous private vehicles, including some automobiles, electric street cars and railroads.

In Damascus, fifty years ago, a foreign tourist could not pass through the streets without incurring the risk of being pelted with stones. And the native Christian did not dare to ride a horse nor use a saddle of leather. He was restricted to the donkey and the wooden saddle in proof of submission and inferiority. A truly marvelous change in public opinion has taken place during the last two or three decades. I have listened to a Turkish lady, unveiled and in perfect English, discuss public questions from the platform of the American College for Girls in Constantinople.

Going back to Damascus, the glorious White City of the East, where reaction and intolerance reigned supreme within the memory of men still comparatively young, they now have electric street cars, and the Grand Mosque is lighted with electricity. They have modern water works, they have railway connections north and south. I witnessed myself the first public display of foreign flags in Damascus. It was in the fall of 1898. Until that day no flag but the crescent and the star had been allowed to fly in Damascus, not even from the foreign consulates.

This evolution in the Levant is not the result but the cause of recent reforms in the administration of the countries of the East. It is certain to prevail, no matter what fate may overtake this government or that. It will prevail in spite of domestic and international complications. It is independent of political eventualities.

The countries of the East are entering upon an era of economic development which will entirely change the aspect of things, and gain for them a high place among the commercial nations of the world. Our European rivals realize this and are taking most energetic steps to protect and promote their national interests in the premises. These are *new markets, markets of great potentiality*. and they deserve very special attention. We Americans ought to be interested, and we are increasingly so. Those markets in the Near East intimately affect the well-being of thousands of American laborers, farmers, manufacturers, merchants and shipping men. It is not an academic question I am discussing, but a live, practical issue which even has called for comment in presidential messages to Congress. I am here to assist in bringing about closer commercial and financial relations between America and the Near East.

What are the essential facts about these relations?

I have spent nearly fourteen years as a consular officer in the Levant; longer, in fact, than any American consular officer ever served out there—and yet in those waters of the Eastern Mediterranean, although I have moved about considerably, *I never saw our national flag waving from an American masthead except from pleasure yachts and warships.*

Things used to be different. In illustration I need only refer to our wars with the Barbary States during the administrations of Jefferson and Madison, which were waged (and successfully so) for the purpose of protecting American trade and shipping in the Mediterranean.

The New England states owned and operated the preponderant share of our shipping in those early days. "Old Ironsides" still lives to prove the activity of Boston ship yards even before the dawn of the nineteenth century. At one time there was a regular line of American ships plying between Boston and Smyrna.

Boston played a leading role in our Mediterranean trade from the very beginning. I know of a Boston man—his grandson is a merchant of Smyrna today, and his great-grandson is a clerk in my office in Constantinople—who came out to the Levant on trading bent in the days of George Washington. His son established himself permanently in Smyrna about 1820 and was joined by other Bostonians, who in time formed together a little colony of American merchants, remnants of which still exist. One of these Bostonians, now in business in Smyrna, is the grandson already referred to, J. D. Langdon; another is Francis Blackler, president of the Smyrna Branch of the American Chamber of Commerce for the Levant. David Offley, one of the original American merchants in Smyrna, was our first consul in that city.

A son of Consul Offley was a passenger on the first American merchant vessel which ventured as far as Constantinople. This, according to Josiah Brewer, an American missionary in Smyrna (father of the late Associate Justice Brewer, born in Smyrna in 1839), happened in 1826. Our flag was first displayed before the ancient walls of Constantinople in the fall of 1800, when Capt. Bainbridge arrived in the frigate "George Washington," carrying presents and messages to the sultan, compelled thereto by the Bey of Algiers. In 1856, seventy-eight American vessels touched at Constantinople, as shown by our consular reports.

While the war of 1812, which left the United States a tried navy, enabled our country to beat the Barbary pirates who for centuries had ravaged the Mediterranean, and to teach them to respect human freedom and the rights of commerce, thus opening a way for our missionaries and our merchants, the civil war of the sixties brought disaster upon our shipping and trade in the Mediterranean. Despite the distinctly friendly attitude of the Sultan of Turkey (Abdul Aziz), our shipping was gradually driven off and destroyed, and today, as I have already remarked, the American flag is never seen in the Eastern Mediterranean on an American merchant vessel.

Our trade naturally suffered in consequence, and when petroleum was discovered in Caucasia, our commerce in the Near East appeared to have received its final death blow. When I came to Beirut in 1898, the entire imports of American goods to Syria consisted of some boxes for the missionaries and Singer sewing machines. Smyrna alone remained true to early ideals, and a Cabot sheeting held the fort in spite of all perplexities.

In the meantime Americans had rendered invaluable services to the countries of the Near East, not only along

purely missionary lines, but also in the matter of introducing economic improvements. Turkey owes to America the potato, the first telegraph instrument, the cotton gin, the exploitation of the hair of the Angora goat, agricultural and milling machinery. It is hardly possible, however, to separate even such contributions from regular American missionary work in Turkey. As a matter of fact, the American missionaries have devoted themselves to the uplift of the people of Turkey, not only in spiritual, but also in material affairs. For this, the Ottoman Empire is indebted to them, and so is the international commerce. The Earl of Shaftesbury is reported as having described the American missionaries in Turkey as a "marvelous combination of common sense and piety." Those I have met—and I have met very many of them—have been distinguished also for their refinement and education. The American missionaries, as I have known them in Turkey, have had to be all things to all men—physicians, mechanics, savings banks and legal advisers. I once saw a typical American missionary, who recently died in Sidon, within an hour perform the following functions: Converse with a native mule driver and hand him a copy of the New Testament in Arabic, produce from his vest pocket plaster for a wounded hand, repair a badly damaged music organ and advise some tillers of the soil regarding machinery for crushing olives. American missionaries created the cotton lace industry in Turkey, which has become a national asset. This year the exportation of cotton lace to America will amount to about $1,000,000, as against half of that amount in 1911. Manual training schools have been started in Turkey by American missionaries, also model experimental farms. At Robert College, in Constantinople, they have an up-to-date engineering school, the only one in Turkey. At the Syrian Protestant College in Beirut they have a school of commerce, by far the best of its kind in the Ottoman Empire. American medical missionaries have introduced new remedies for sickness, thus preserving the health of the people and incidentally strengthening their initiative and enterprise at the expense of their fatalism. By encourgaing self-support and self-government in the management of the native congregations, the American missionaries in Turkey have taught wholesome principles which made for the progress of the country along individualistic democratic lines.

The American missionaries have rendered a tremendous service to Turkey by their proverbial truthfulness. The people of Syria with whom I am best acquainted would never suspect an American missionary of being capable of even the slightest deception. The American missionary record on this score has proven a powerful factor in building up character in the East, and of promoting commercial morality. By their example and helpful attitude the American missionaries have contributed more than will ever be known toward making family and home life in Turkey more comfortable and edifying, and raising the standards of living. Instances of families and their cattle living together in one room are growing rare in Turkey. Equally important from a commercial viewpoint is the service rendered by American missionaries in Turkey in exploring the remoter sections of the country. The journey, for instance, undertaken by Eli Smith and H. G. O. Dwight from Constantinople to the borders of Persia in 1830, may properly be compared to the Lewis and Clark expedition across the American continent. The travels of Dr. Grant and Rev. Dunmore in Kurdistan and upper Mesopotamia opened up those unknown regions to missionary and subsequently also to commercial enterprise. Furnishing text-books as the American missionaries have done on scientific topics in Turkish, Arabic, Armenian and Greek and publishing newspapers similarly accessible have stimulated industrial activity.

In Constantinople is published the only American newspaper in the Levant. It is called "The Orient," and is a most excellent publication, edited by C. T. Riggs, who, like his father and grandfather, has worked earnestly, intelligently and sympathetically for the advancement of Turkey (not to speak of Bulgaria). On the Bosphorus are going up great buildings these days, intended for the American College for Girls, which soon is to be transferred from Scutari on the Asiatic side. They are introducing into these buildings the most up-to-date appliances for steam heating, electric lighting and plumbing, all of which, along with doors, windows, reinforced steel—in fact, all material beside the building machinery (except the cement and some of the structural iron)—has been brought from the United States. The architect in charge and the foremen are Americans. There is nowhere in Turkey such perfect equipment for any public or private structure. Those American buildings on the Bosphorus will remain for generations an eloquent witness of the peculiar merits of American manufactures and building talent. The graduates of such American colleges as those in Beirut and Constantinople, Aintab, Harput, Tarsus, Marsovan, Smyrna, having become familiar with modern improvements and having gone out as leaders of thought and action in their native home districts in Bulgaria, Turkey, Greece and Egypt, have potently contributed to the regeneration of their respective countries, and to them is due in part the present progressive tendency in the East.

There are at the present time nine American societies working in the Turkish Empire, including Syria, carrying on a Bible, educational, philanthropic and general missionary work. The total number of workers, male and female—American citizens—supported by these nine societies, is about 750, and they have associated with them a force of educated native helpers, numbering about 2,250. The charge to the societies for supporting the above mentioned force of workers, together with the work which they carry on, is upwards of $1,000,000 annually.

The amount represented in the permanent plant of the above mentioned societies, including buildings, grounds, hospitals, printing plants, with their outfits, reaches the sum of $6,000,000.

The educational department of the work sustained by these societies embraces ten colleges with 1,360 students and eleven theological schools and classes with 173 pupils. But the school system includes high schools, school of industrial training, primary village schools and kindergartens. These bring up the total to 670 institutions, enrolling over 40,000 pupils.

The medical department of the work embraces thirty-six hospitals and forty-five dispensaries. The annual reports of this branch of the work show that upwards of 6,500 patients are treated annually in the hospitals as in-patients, while the whole number of treatments given by the physicians amounts to upwards of 430,000 per year. At the Syrian Protestant College in Beirut there is one full medical college with also a pharmaceutical department enrolling over 160 students, and one school for the training of nurses.

The care of orphans in the land has received a large

share of attention, especially since the massacres, following which many children were left without parental care. There are at the present time conducted by Americans in the Turkish Empire twenty-two orphanages, enrolling 3,000 inmates.

In connection with these orphanages an industrial work has sprung up, which gives employment to upwards of 10,000 people, in addition to the orphans. The work done in these industrial enterprises is largely performed by widows and orphans, and includes rug and lace making, various forms of embroidery and other domestic work. The product of these institutions finds a market abroad, entailing a vast amount of correspondence.

There are extensive printing plants in two centers, Constantinople and Beirut, the annual output of which, including Bibles, mission books, tracts, family newspapers, etc., reaches the sum of about 75,000,000 pages a year.

Nevertheless, American trade in Turkey continued in an embryonic state. Then came the war with Spain and the age of expansion. The period of exclusiveness was past. As a factor in foreign trade, in the eyes of the peoples of the Near East, America once more appeared on the map. Our exports to Turkey in round figures amounted to $50,000 in 1891, to $500,000 in 1901 and to $5,000,000 in 1911. The chief articles exported from America to Turkey are cotton seed oil, oleo oil, petroleum, rubber shoes, leather, leather shoes, cotton goods, agricultural machinery, hardware, furniture, starch and glucose. Our imports from Turkey grew from $4,927,041 in 1892, to $7,468,379 in 1901 and $19,929,629 in 1911. America is Turkey's best customer, next to Great Britain, France ranking third and Germany fourth. We import from Turkey principally cigarette tobacco, opium, carpets, wool, skins, figs, cotton lace, licorice root, mohair, emery stone, nuts and seeds, valonia. I am speaking of the direct trade, and shall refrain from guessing at the volume of the indirect trade.

It is very obvious that we are progressing commercially in Turkey. And yet the fact remains that in Egypt, Greece, Turkey and the Balkans, countries whose imports amount to approximately $475,000,000, this great nation of ours furnishes hardly 1 per cent. Ample room, therefore, exists for improved commercial relations with the Near East. We must be up and doing, for the countries of the Eastern Mediterranean and the Black Sea are moving ahead rapidly these days, and the United States is far from having its proper share in this development, although along educational lines, through missionary schools and colleges, it has played a leading part in their regeneration, and although America practically opened up the Mediterranean in the first place as it subsequently opened up Japan.

In March, 1911, an American Chamber of Commerce for the Levant was organized in Constantinople. It has already nearly 600 members, the large majority being exporters and importers residing in Turkey, Egypt, Greece and the Balkan states. Included in the membership are about eighty manufacturers and exporters and importers in the United States. This Chamber of Commerce, which publishes an excellent quarterly entitled, "Levant Trade Review," has greatly stimulated American trade in the East Mediterranean and Black Sea ports. There were more American commercial representatives in evidence in Constantinople during the twelve months ending June 30, 1912, than Constantinople has seen for a generation.

Some of the American exporters have established agencies in Bucharest, Sophia, Belgrade, Constantinople, Salonica, Smyrna, Beirut, Alexandria, Cairo and Athens. They have realized that dependence on a general agency in Liverpool or Hamburg to secure the trade of the Near East is not the wisest policy.

Through consular activity arrangements have been perfected, whereby American commercial samples may now reach Turkey by parcels post.

Above all, a steamship line has been organized which will maintain a regular and direct service between the United States and the Levant. This line, although owned and operated by the MacAndrews & Forbes Company, of New York, an American concern, will have to fly the British flag in order to fairly meet competition—a rather striking reflection upon our navigation laws, which have driven our flag off the high seas.

Still much remains to be done in order to place American trade in the Near East upon a proper footing insuring commensurate results. We require American capital in the Near East in the development of native resources—for railroads, ports, irrigation and reclamation projects, telephones, and electric street car systems.

Hon. John Ball Osborne, formerly chief of the Bureau of Trade Relations of the Department of State (now American consul at Havre, France), in a recent article published in the "North American Review," places the extra-territorial investments of American capital at $2,000,000,000, of which three-fourths is invested in North America, especially Mexico, Canada and Cuba, and the rest as follows: Europe, $200,000,000; South America, $175,000,000; the Far East, $50,000,000; the Near East, $10,000,000.

This condition of affairs, which militates against our commercial expansion in the Near East—because trade follows investments—may be remedied, and no doubt will be remedied. I would have in Constantinople an American industrial or investment bank; besides that I would have in Constantinople an American mercantile agency and an American news or telegram bureau.

As a means to bring about such and similar improvements, I would strongly recommend a commercial excursion of American business men to the Mediterranean countries, and I hope the various chambers of commerce and other American organizations will recommend this scheme to the Chamber of Commerce of the United States, and that the latter will take suitable action.

In order to get into close touch with the markets of Egypt, Greece, Turkey and the Balkans, I would also recommend that you form in the principal American cities branches of the American Chamber of Commerce for the Levant or join the latter as individual members. Our experience so far is a guarantee that such a move would produce far-reaching results in spreading knowledge where there is now misconception; confidence where there is now mistrust. Specialized knowledge is as essential in foreign trade as in the professions. I believe that American commerce would be greatly extended abroad by the wider application of a policy of specialization and concentration. Some of your exporters and importers may be able to deal successfully with different markets in different parts of the world, each requiring totally different treatment. But to the majority of your business men engaged in foreign trade it is preferable by far to deal with a circumscribed market; to exploit such limited territory thoroughly and to cultivate the commercial relations entered into so as to render them permanently enduring.

Besides a policy of concentration I would also urge a policy of foresight. We must build not only for the present but also for the future. We must be satisfied with small profits to begin with, in order to become firmly established in foreign markets. The time will surely come when our foreign trade will prove a national insurance of vital importance to the welfare of our country. We cannot have this insurance without paying the premiums. Even today our factories could not run without the foreign outlets for their products. Our foreign affairs are of ever growing moment and concern to the American people, largely on account of the tremendous development of our manufacturing industries, on which our prosperity as a nation depends in ever increasing measure, and on account of the fierce rivalry between the nations in the markets of the world. I feel convinced that we soon shall have commercial colleges supported by the national government, just as we now have agricultural colleges supported by the national government. I feel equally convinced that, before many years, there will be no man left in American public life seriously proposing to disrupt our consular service because there happens to be a change of administration at home. Our success in foreign trade depends not only upon the quality of our goods, but also upon thorough commercial education at home and upon trained and experienced representatives abroad, whether they are consuls or commercial travelers.

The markets of the Mediterranean do not differ greatly. Allow me to suggest that you go after them earnestly and persistently and intelligently. They are worthy of your attention. The countries between Malta and Bombay, between Khartoum and Odessa, are undergoing an economic revival which is constantly producing new markets and fresh commercial needs. They are also producing ever increasing quantities of raw materials needed to keep American factories running. Egypt alone furnishes each year to America some $15,000,000 of raw cotton.

I believe in commerce. Next to religion there is no agent of civilization more powerful and beneficial than commerce.

Commercial intercourse between individuals and nations promotes knowledge as against ignorance, tolerance as against prejudice, progress as against reaction, peace and the arts of peace as against strife and destruction.

That nation in which trade and industry flourish, and which actively encourages commerce, both foreign and domestic, is fairly certain to be a prosperous, free and happy nation.

THE NATIONAL CHAMBER OF COMMERCE.

The Annual Meeting Number of *The Nation's Business*, which is the name of the official publication of the Chamber of Commerce of the United States of America, contains much informative material for the merchant and manufacturer. Twenty-one pages of this issue are devoted to "Anti-trust Legislation." Three pages are given to the speech of Hon. C. A. Prouty on "The Valuation of Railroads." Five pages include the addresses on "The Maintenance of Resale Prices." The other eleven pages will be found of equal interest. The issue is a worthy representative of that great body for which it speaks.

Oklahoma City has been selected by the Board of Directors of the Southern Commercial Congress, in its annual meeting, as the place of the Sixth Annual Convention of the Congress, to be held in the fall of 1914.

CONVENTION OF THE NATIONAL ASSOCIATION OF COTTON MANUFACTURERS.

Coincident with the announcement of the date of the annual meeting of the National Association of Cotton Manufacturers which will be held in Boston on April 29 and 30, Edwin Farnham Greene, president of the organization, announced the appointment of a textile customs committee whose functions will be exercised in aiding the enforcement of the tariff law. In his statement Mr. Greene says in part:

"The new tariff law has introduced many altered conditions pertaining to manufacturing, among them being its ad valorem basis, which is susceptible to many and grave abuses by undervaluations, and which will require unusual acumen by United States officers, to whom all citizens should give of their skill and ability to assist in the enforcement of the law, especially as the exact determination of certain portions of the act must rest with departmental rulings and decisions of the United States Court, reaching in some instances to the Supreme Court.

"This condition of affairs has been earnestly considered by the National Council of American Cotton Manufacturers, in conjunction with other textile organizations, and a textile customs committee has been appointed to cooperate in the enforcement of the tariff law, and they have established a textile bureau for this purpose.

"To render effective service the textile bureau will need the aid and cooperation of the members of its constituent associations in obtaining information upon which to formulate its work. For this purpose members are requested to promptly communicate particulars of any circumstances coming to their attention which indicate a probability of undervaluation of imported manufacturers of wool or cotton; also any question concerning the interpretation of the existing tariff law and customs regulations respecting woolens and cotton products."

The forthcoming meeting will be held in Paul Revere Hall in Mechanics Building, in acceptance of the invitation of the Textile Exhibitors' Association, which is to hold an exhibition of textile machinery that week.

In addition to President Greene it is expected the speakers' list will include Governor Walsh, of Massachusetts, and William J. Harris, director of the census, who will probably discuss the methods to be employed in the forthcoming Federal census of manufacturers. Also, papers are expected on the following subjects:

"Care of Boilers in Cotton Mills," "Economy in Handling of Material in Cotton Mills," "Efficiency and Cost of Doing Business," "Electric Power Contracts," "Improved Methods in the Handling and Dyeing of Raw Cotton,—Yarn and Piece Goods," "Methods of Reducing the Fire Hazards of Cotton Pickers," "New Cotton Type Standard," "Opportunities for African Commerce in American Cotton Textiles," "Political Economy in Cotton Manufacturing," "Prevention of Decay in Mill Timbers," "Railroad Mill Yard Transportation," "Trade Practices in Mill Supplies and their Regulation," "Financing Cotton Mills in the United States," and "Uses for Compressed Air in Cotton Mills."

Papers on the subject of cotton manufacturing are solicited from the members and it is hoped that information will be given of any such papers at an early day, in order that the proper reservation may be made on the program.

COMPARATIVE PRICE CHANGES OF RAW COTTON AND COTTON GOODS.

Louis Lowinson, a well-known cotton goods broker at 72 Leonard street, New York, has prepared a very interesting chart in which the price changes during 1913 in several of the standard varieties of cotton cloth are compared chronologically with the contemporary quotations for middling cotton in New York. This chart is of so much real interest to the cotton manufacturer that COTTON has secured Mr. Lowinson's permission to reproduce it herewith. Anyone interested, who is legitimately entitled to one of these charts, may obtain one gratis by applying to Mr. Lowinson. We are also advised by Mr. Lowinson that the 1914 chart will contain several additional constructions, including narrow print cloths and coarse sheetings.

Copyright, 1914, by Louis Lowinson.

Construction	72 x 76 39″ 4.25	68 x 72 39″ 4.75	64 x 60 38½″ 5.35	60 x 48 38½″ 6.25	Spot Middling Upland Cotton
Jan. 3	6½	6	5¼	4⅝	13.30
" 8		5⅞			13.10
" 14		5¾	5⅛	4 7/16	13.00
" 22		5⅝		4½	13.00
" 28	6⅝	5¾			13.15
Feb. 5				4 7/16	12.95
" 7				4½	12.95
" 19		5⅞		4 7/16	12.60
" 21	†	5¾		4½	12.50
Mar. 3	6¼		5 7/16		12.70
" 7			5⅛		12.60
" 15		5 1/16			12.60
" 19			5		12.60
" 21		5⅝			12.60
" 29	6	†		†4 7/16	12.90
Apr. 10		†		4⅜	12.50
" 17		5⅜			12.40
" 19	5⅞		4 7/16	4¼	12.15
" 30			4⅜		11.80
May 2			4 1/16		11.85
" 3	5¾	†	4⅜	4⅛	11.85
" 6		†	4⅞		11.90
" 7			4¾		12.00
" 8				4 1/16	12.00
" 9		5¼			12.00
" 10			4 1/16		12.00
" 16	5⅞	5 7/16	4⅞		12.00
" 19	5 13/16	5⅝			12.00
" 20	5¾				12.00
" 21	5⅞	5½			12.00
" 22			4 1/16	4¼	12.10
" 24	6				12.10
" 26				4 1/16	12.00
" 29	5 13/16				11.80
June 3		5⅝			11.70
" 4				4⅝	11.70
" 9	6				12.25
" 10	5 13/16				12.25
" 11			4⅞	4 1/16	12.25
" 20		5 1/16		†	12.50
" 26				4¼	12.40
" 27	5⅞	5½			12.30
July 8			4¾		12.25
" 9				4 1/16	12.35
" 11		5 1/16	4⅞		12.30

Construction	72 x 76 39″ 4.25	68 x 72 39″ 4.75	64 x 60 38½″ 5.35	60 x 48 38½″ 6.25	Spot Middling Upland Cotton
July 24				4¼	12.15
" 25		5 7/16			12.05
" 28		5⅜			11.95
Aug. 1			4¾		12.10
" 8		†		†	12.00
" 9		5¼			12.00
" 11			4⅝		12.00
" 14		†5⅜			11.90
" 15		†	4¾	4⅛	11.90
" 18			4 1/16		12.00
" 19			4¾		12.00
" 20			4 1/16		12.15
" 21				4¼	12.25
" 22	6	†5½	4 1/16		12.15
" 26		5½	4⅜		12.45
" 29			4 1/16	4 7/16	12.50
" 30		5⅝	5	4⅜	12.50
Sept. 3	6¼	5¾	5 7/16		13.30
" 4			5⅛		13.25
" 6	6⅝	5⅞	5 7/16	4½	12.75
" 11		6	5¼		13.15
" 12				4⅝	13.15
" 17			5 1/16		13.40
" 19	6 1/16				13.40
" 20		5⅞			13.60
" 24		6	5⅝		13.60
" 26	6¾	6⅛	5 7/16	4 1/16	14.10
" 27				4¾	14.30
" 30	6⅝				14.20
Oct. 2		6¼	5½		14.20
" 7	7				13.90
" 8		6⅛			13.90
" 14	6⅞				13.50
" 20		6¼			14.30
" 27	7			4 1/16	14.50
Nov. 8	6⅞	†		4¾	13.70
" 14			5 7/16		13.90
" 19			5⅜	4 1/16	13.70
" 28	6¾	†6⅛	†5⅜	4⅝	13.40
Dec. 3				4 7/16	13.50
" 8				4½	13.40
" 18			5¼		12.90
" 19		6		4 7/16	12.80
" 22			5⅛	4⅜	12.50
" 31	6¾	6	5⅛	4⅜	12.60

Blank spaces indicate quotations unchanged.

† Late contracts slightly lower.

NOTE—In the original chart the advances in the prices of the four constructions and in the price for Middling Upland Cotton are in red ink to show them up more clearly.

JOSEPH FELS.

Joseph Fels, millionaire soap manufacturer, single tax advocate and philanthropist, died at his home in Philadelphia, Pa., on February 22nd, from pneumonia.

Mr. Fels spent most of his time advocating the doctrine of the single tax in both this country and Great Britain. He recently returned from England, where he has given a large part of his fortune to the creation and maintenance of a single tax cooperative colony near London.

Although he early became an advocate of Henry George's ideas, it was not until he went to live in England as the English representative of his firm, that Mr. Fels began to devote almost all his time, money and energy to the cause of the single tax. Since then his friends estimate he expended more than $100,000 annually and visited every part of the world to advance the propaganda. Not only was he a leader in the cause in this country and England, but he was a large contributor to funds for single tax campaigns in Denmark, Germany, France, Spain, Australia, New Zealand and Canada, matching dollar for dollar the amounts given by all other contributors. His guarantee to the Fels fund in America was $25,000 a year. He also was one of the financial backers of the Arden colony in Delaware, and the Fair Hope colony near Mobile, Ala., where the theory of the single tax was given practical demonstration. Prominent as a speaker and writer as well as a contributor for the cause which he advocated, even during his last illness he was engaged in preparing an article on the subject of taxation.

Mr. Fels was born at Halifax Court House, Virginia, on December 16, 1854, the son of Lazarus and Susannah Freiberg Fels. He was educated at private schools, but at seventeen he began to travel for a soap manufacturer in Baltimore. In 1874 he went into the soap business in Philadelphia with his father in the firm of Fels & Co., for the manufacture of Fels-Naptha soap. Mr. Fels established a branch of his business in England in 1901, and since that time had spent a part of each year in London. Anticipating the needs of profit sharing in large industries, Mr. Fels and his brothers were probably the pioneers in that direction in this country. It was in April, 1910, that such a plan was started in the Fels factory at Philadelphia. At that time more than $50,000 was distributed to the employes as their share of the profits made by the company in the preceding year. He is survived by a widow, three brothers and three sisters.

Mill Conditions and Market Reviews.

SOUTHERN MILL SITUATION.

Many are inclined to think that there should be a suppression of the calamity howlers who fail to realize that there is no ground for pessimism or discouragement in the business outlook for this country.

Looking at the broader features of commerce, the facts are such as to fill us with hope. There is little in them to justify either doubt for the present or fear for the future. The crops, generally speaking, are tremendous. One does not need to be worried by the cry of "wolf," for the cry has been made before, and the wolf did not come. The tariff has now been in effect nearly three months, but so far the results have not been as disastrous as many expected.

There is nothing to scare anybody in the fact that we are selling more of the products of foreign labor from abroad. The truth is that Europe is feeling a serious reaction following the Balkan war, and that this is reflected, but in a comparatively small degree, upon us. The ability of our industries to maintain themselves in the foreign field is evinced by the fact that amid this depression abroad, when foreign prices are low, our own industries are increasing their sales in the markets abroad.

We note an announcement to the effect that the revision committee of the New York Cotton Exchange had decided to make no change in grade differences. This was followed by a heavy general selling movement in the market during the past few weeks. The heavy into-sight movement has reflected the active spot demand from the South during January and but encouraged the larger views of the American crop, while some authorities abroad contend that foreign cotton crops for the first time on record may equal the American production. Such ideas of the world's supply seemed to offset the more optimistic view of general trade conditions in some local circles. There have been many reports of scarce seed in the Southwest.

As was expected, the custom receipts for the first January under the new tariff law fell off $6,000,000. A loss of $45,000,000 a year under the new tariff had been figured on, and the January figures had been discounted in advance. It was in the income tax that provision had been made to meet this loss in customs revenue, and the income tax, from all reports, is going to bring it in.

We note from a recent issue of the *Wall Street Journal* that "there can be no doubt that all the world is better clothed by reason of the expansion in the world's cotton spinning industry. Some observers are alarmed at the increase in the number of active spindles in the world from 105,681,000 in 1900 to 143,398,000 in 1913 (census figures), or 35.7 per cent. The gain in capacity of more than one-third in thirteen years is of course unusual for any industry. Mill consumption of cotton correspondingly increased 42 per cent. The disparity is not great between consumption and spindle growth. What there is, however, may be due to the undoubted increase in the production of coarse yarns in the Southern states and in the Far East, including India, China and Japan.

Progress of yarn production of the coarser grades is none the less an excellent index to the increasing demand for the less expensive kinds of cotton cloths. The backward races of the world have within these 13 years been increasingly brought within the world's cotton cloth market. Since 1900 the yarn mills of India increased their output 20 per cent, producing 600,000,000 pounds last year. British yarn exports have remained more or less steady, but the piece goods exports gained nearly 32 per cent since 1901-02. The export trade of the great manufacturing nations is as good a measure as any of the improvement in the purchasing power of peoples, especially in countries where the progress of railroading as a new mode of travel has broadened the area for the cheaper textiles.

Last year the cotton mills of the world took 21,522,000 bales of 500 pounds each. Against that, there was charged an estimated production of 21,457,000 bales. That apparently narrow margin between consumption and production ignores the existence of a visible and invisible reserve of several million bales, which under higher prices tends to diminish. Instead of causing anxiety this may well be regarded as sound business. Crops are made to be consumed, and if spinning capacity runs ahead of production the natural regulative is to advance the price of the raw material"

The discussion of grade differences on the New York Cotton Exchange has attracted much attention during the past month, beginning with the following letter from President H. G. WELBORN, of the Hampton Cotton Mills Co., Columbia,, S. C., to Senator B. R. TILLMAN, which was read into the Congressional Record of February 2nd:

"DEAR SENATOR: I note with pleasure that you have recovered from your recent indisposition, and I sincerely hope and trust that you have regained your strength, for the Democrats have done so much good so far, and I realize that your long experience and good judgment has been an aid to the Democrats now that we have a majority.

"In looking over the Journal of Commerce for Monday, January 26, I note that it is stated a spinner tried to secure 3,000 bales of good middling cotton in New York City, and that this spinner was asked 192 points above the quotations of March cotton, which closed on that day at 12.67 cents. According to my addition this cotton manufacturer was forced to pay 14.49 cents per pound for March delivery for spinable cotton, when the New York Cotton Exchange quoted middling cotton at 12.57 cents for March delivery, and their basis is that good middling cotton has a value of 65 points over middling. According to the New York Cotton Exchange quotations this cotton should have been priced to the spinner at 13.22 cents. Now you can see that the trading in actual bales of good middling cotton for March was on a basis of 14.49 cents, and the theoretical trading engaged in by the speculators was on a basis of 13.22 cents. Now cotton manufacturers have to pay the price for good cotton and make their cloth on that basis. Yet when we go to New York to sell cloth we always continually have thrown in our faces New York Cotton Exchange prices, and according to this basis of figuring same is 1.27 cents too low, or for a 500-pound bale, $6.35. I am not giving you anything except facts, and the truth is that 14.47 cents represents just about

what it would cost a spinner to get good middling cotton for his mill for March delivery.

"In view of the fact that the New York papers continually criticize Congress for attempting to regulate the New York Cotton Exchange, or for having anything to do with it, I thought this information would probably be worth the while for you to have when the discussions come up for and against the cotton exchange. As a manufacturer I am strongly opposed to the New York Cotton Exchange as it is now run. I think it should be abolished or its prices made to represent something worth while to consumer and producer, and not run as a gambling joint."

On February 18, the following resolution was unanimously adopted at the annual meeting of the Hard Yarn Spinners' Association in Gastonia, N. C.

Whereas, the spinning mills of the country are suffering loss on account of the disparity between New York cotton quotations and the price of actual cotton, which quotations are misleading and confusing to the trade, Therefore, be it

"Resolved, That it is the sense of this Association that the present system of the New York Cotton Exchange relative to the great number of grades of cotton that can be applied for delivery on contracts is detrimental to the best interests of the farmer, manufacturer and cotton merchants, and this should be so changed that a specific grade should be stipulated in all contracts, with a specified difference for grades above or below a standard basis grade.

"Resolved, Further, That we request our Senators and Representatives in Congress to enact some law for the regulation of the Cotton Exchange, which will afford relief from these hurtful conditions."

Some other cotton exchanges and cotton publications also passed resolutions or printed editorials of similar import, and these taken collectively induced Theodore Price in the February 25th issue of his paper *Cotton and Finance* to make the following comments:

"All these people demand something that has been already done, but they forget that existing contracts cannot be made the subject of legislation that will affect the rights of the parties thereto. It is only possible to legislate with regard to new contracts.

"As a matter of fact, the New York grade differences on cotton below middling are already as wide, if not wider, than the differences on the same grades in any Southern market. Most of the criticism is, therefore, pointless.

"The real trouble is that New York is no longer a cotton market. Cotton brought here and delivered on contract and then shipped away from here to a mill is subjected to a charge for transportation and handling that is from two to three dollars a bale more than the cost of shipping it direct from the South to the consumer. The result is that shipments are only attracted here by a semi-corner, and cotton can only be commercially moved away from New York by depressing prices to a point which will offset this additional expense.

"Someone has to pay for this waste, and the market automatically adds it to, or deducts it from, the contract price as may be necessary to increase or diminish the local stock.

The only way to offset New York's geographical remoteness from the cotton fields and the cotton mills is to trade here in cotton that is deliverable at Southern points from which it can be shipped to the consumer at the lowest possible cost.

"If this is done the New York Cotton Exchange has a long career of commercial usefulness and prosperity ahead of it.

"If it is not done, commercial differences and Government grades will prove unavailing against the hard mathematical fact that it costs from $2 to $3 a bale more to get cotton from the South to a spinner via delivery on New York contract than it does to ship it direct.

"Meantime the state of South Carolina seems upon the point of removing the only objection that has been urged against Southern delivery on New York contracts; namely, the irresponsibility of the Warehouseman. On the 18th of February the Senate of South Carolina passed the McLaurin bill establishing a state warehouse system. The House has yet to act upon the measure. If it becomes law it will be the salvation of the New York Cotton Exchange unless, through hardness of heart, the opportunity is rejected."

One of the features brought out by the speakers at the annual meeting of the Hard Yarn Spinners' Association at Gastonia was the number of the mill men who expressed themselves as being in favor of compulsory school laws and their strict enforcement, saying that they wanted no child labor laws that would make the children idle and allow them to remain out of school. It seemed to be the sense of the body that they would have no objection to offer to the state extending the compulsory attendance age. That intelligence brought efficiency was the opinion of all, and each seemed to look forward to the time when education shall bring about the highest development in the textile industry.

Among the changes and improvements it is of interest to note that the Greenville, (N. C.) Cotton Mills, which were previously reported as organized, has awarded its building contracts to the Gallivan Construction Company of Greenville, S. C. This work includes the main mill building and ell, a storage warehouse, a large reservoir, and a 50,000 gallon tank on a tower. This mill will have, when completed, 5,000 spindles and a 200 h. p. steam plant. The product manufactured will be hosiery yarn. R. C. Biberstein of Charlotte, N. C., is the architect-engineer in charge. Contracts for machinery and for the building of cottages for the operatives will soon be awarded.

The Appalachian Mills at Knoxville, Tenn., have purchased the old Holston Mill and are to equip it for yarn spinning. 10,000 spindles and other accompanying machinery will be installed, together with a 600 h. p. power plant. This equipment will have a daily capacity of 75,000 pounds of cotton yarn. Bids for the machinery will be opened on April 1st. The Appalachian Company already operates 60 knitting machines, 200 sewing machines, dyeing equipment, bleaching apparatus, etc., on the production of men's cotton ribbed underwear.

J. W. Martin has been awarded a contract to build a new hosiery mill at Elizabeth City, N. C. The work of construction will be begun at once. This mill, which will be known as the Avalon Mill, will be 65 by 130 feet, constructed of brick and steel. This plant will have a capacity of 1500 dozen pairs of hosiery a day and will employ about 200 operatives. The mill will be under the management of the officers of the Elizabeth City Hosiery Company and will be operated in connection with the old mill.

The Rogersville (Tenn.) Knitting Company has been incorporated and capitalized at $50,000. It will establish a plant to manufacture hosiery and other knit goods.

The Century Knitting Mills, at Old Fort, N. C., has completed its organization and has a capital of $125,000. It is to construct a building 150 by 75 feet. The officers of this company are as follows: F. A. Lukin, president; C. F. James, vice-president and manager; F. M. Bradley, treasurer.

The Atlantic & Gulf Mills at Quitman, Ga., it is announced, will be completely reorganized and running in the next 30 days. The Quitman Mfg. Co., which is now in process of organization, will take over the property of the old Atlantic & Gulf Mills and will make the necessary improvements and put the plant in operation. L. W. Cuddy, formerly of New Bedford, but lately superintendent of the Bibb Mfg. Co. plant at Columbus, will have charge of the active management of the plant.

The Cannon Mfg. Co., at Kannapolis, N. C., has recently been awarded a contract by the United States Government for the manufacture of 60,000 Turkish towels for the Navy Department.

An involuntary petition of bankruptcy has been filed against the Winder (Ga.) Cotton Mill, by a number of its creditors.

The Coosa Mfg. Co., at Piedmont, Ala., are to replace 22 old spinning frames with new tape driven spinning frames. Eleven tape driven twister frames will also be installed in the place of the ones now being used. This contract has been awarded.

The May Hosiery Mills at Nashville, Tenn., has leased the Nashville Hosiery Mills as an addition to the May company's facilities. This will add a daily capacity of approximately 1,500 dozen pairs of hosiery to the product of the May corporation. The original May plant contained 260 knitting machines, 180 ribbers, 45 loopers. dyeing equipment, etc., employing 350 operatives.

It is understood that a new hosiery mill will be started in Burlington, N. C., and that machinery will be purchased and installed in the building of the Holt Engine Co. It is the intention of the promoters to manufacture ladies' and children's hosiery. The building is 100 x 60 feet. W. W. Brown, who is interested in the proposition, is said to be looking for a man to take charge of the proposed plant.

The Vandois Knitting Mills, at Morganton, N. C., have been incorporated, among the incorporators being W. C. Erwin, Moore and Sigmon and A. M. Kistler.

A movement has been started by the Salisbury, (N. C.) Industrial Club which, it is expected, will result in the establishment of a knitting mill.

ANNUAL CONVENTION OF THE GEORGIA COTTON MANUFACTURERS' ASSOCIATION.

The annual convention of the Georgia Cotton Manufacturers' Association, which is to be held at Atlanta, Ga., on the 8th and 9th of May, will have its headquarters at the Piedmont Hotel. The tentative program announcement was printed in the February number of COTTON. Definite announcement will be made later in regard to the program and entertainment features.

There are few exceptions to the rule that those who look you up wish you to do something for them. The average man would have apoplexy if a caller expressed a desire to do something for him.

NEW ENGLAND MILL SITUATION.

Mills in New England are running well up to 85 per cent of their full capacity. The fine goods mills of New Bedford are not as well employed as they have been, one recent estimate showing that 30 per cent of the looms are idle. At Fall River, it is stated that fully 85 per cent of the machinery is in operation and some estimates place the figure at 90 per cent. An influx of operatives from New Bedford has helped Fall River mills. In other less important centers a lighter volume of idleness is noted although there are some spots where more desirable help is wanted.

The fuller employment in woolen and worsted mills in the whole section during the past few weeks has altered the aspect of labor conditions and the hard winter weather of the past month has served to drive many idlers to seek mill employment. The machine shops are not well employed. Several of them are running full time with a contracted pay roll. The bleacheries and finishing works are well employed on orders for immediate and nearby delivery. There still exists cause for complaint in the slow upbuilding of forward orders, a condition that has existed for some time past. Lace mills are well employed and appear to be very busy. Many of the smaller textile factories are less well employed, notably in the specialty webbing trades and in some of the fancy knit goods mills.

Business is spotty and cannot be generalized with accuracy. The orders taken on cotton blankets and napped goods have been large enough to give full employment in the largest mills for some months to come. On the other hand, many of the fine and fancy goods mills are short of orders save for immediate delivery and the repeat business for spring and summer has been disappointing. Mills making denims are only moderately well provided with late business.

Some of the large gingham mills have work enough in hand to keep them employed for some time to come. There is still a large business on the books for plain chambrays and staple ginghams, but many of the dress gingham mills could easily care for additional orders for near-by delivery.

Printers are well employed. At one time this month the Pacific mills were operating 43 printing machines, and more could be used if printers could be secured. The American Printing Company won its struggle with the 100 folders who tied up the plant for a week or two, and is running on percale and narrow cloths, the former cloths being in better demand than any of the narrow goods. The North Adams works are very busy on near-by work, and they are turning out some of the finest quality printing ever attempted in this country. It is all job work, and is being done largely for the converting trade. The Windsor works are busy on crepes and percale.

Staple prints are not selling well, but there is a good volume of orders for printed crepes and similar goods for immediate use. Printed voiles and ratines have supplied many machines with work, and these goods appear to be selling well among the jobbers and converters. The fall prices named on percale are based on 9 cents for 4-yard 80 squares, which is the price prevailing at the end of the spring season. The large producers have already secured as much fall business as they had a year ago, although buyers complain that the new price is a shade too high for them.

The volume of fancy yarn dyed fabrics offered for fall and for late spring delivery continues to attract considerable attention. Many of these goods are plaids or fancy ratines made on box looms. Some of the new fall offerings are the best quality cloths attempted in recent years by the large mills that are usually employed on dress ginghams.

The month has witnessed a larger business offered on cloths of print cloth yarn construction, but prices are lower than they were last month. Fall River has been a free seller of odd cloths and has booked fair contracts for March delivery. In some instances contracts will carry through May, but this is exceptional, the policy of most manufacturers being to confine orders to near-by deliveries unless special constructions are wanted. There has been more business taken on sateens and twills this year than for many years past, due to a revival in the demand for linings and for printed sateens and twills. Stocks at Fall River at the end of February were less than a million pieces of all kinds of goods, and March contract sales aggregated 100,000 pieces weekly.

Bleached cottons of the finer qualities have held their prices steadily during the spring jobbing season. In fact, Berkely cambrics and nainsooks have been advanced one-fourth of a cent a yard, and are comfortably under order for some weeks to come. Goods of the Fruit of the Loom and Lonsdale grades have been selling at retail, below agents' prices, but the mills still have many goods due on old orders and have not found it necessary to revise prices downward, as gray cloths have gone. On the very low count bleached goods there has been a falling off in price.

It is difficult for manufacturers to discount the future on fine and fancy combed yarn goods. Reorders have come along slowly. Buyers are overwhelmed by the many novelties in the markets, and mills do not care to manufacture for stock, styles are so ephemeral and precarious. On the plain, fine goods prices are unremunerative, and most mills making lawns in either 30 or 40-inch widths have gone slowly in accumulating anything. At the end of the month it was admitted that stocks of plain goods were light, but prices showed little improvement.

Returns made to stockholders by the fine goods mills at the meetings held during February were disappointing on the whole. There were exceptions where earnings were in excess of dividend requirements but it is pretty generally understood that some dividends were drawn from the surplus. On the other hand, there were several of the fine yarn mills that made an excellent showing and to an extent to surprise stockholders as well as the general public. Competition on some of the staple numbers of combed yarns has brought prices to a close profit margin, but there has been enough business doing on special qualities to enable many of the mills to make a profit.

Cloths in demand from the fine goods mills are crepes, silks and cottons, poplins, voiles, and fancy ratines. During the past month a new development of importance began to show itself and it is quite possible that another month will see a positive and broad demand again for the very fine sheer fancies, such as transparent organdies, mercerized batistes, and the many fancy cloths on sheer grounds. At the present time styles are working on sample lines of sheer fine cloths in armure and leno effects and some very small checks. The goods are expected to be used largely for waistings and summer dresses and will require a larger use of staple cotton than has been seen in the fine goods mills for some years.

There are still many grades of ratines on the looms and wash goods men declare that they do not see what is to take their place as yet. At the same time, many of the foreign ratines are being sacrificed at the retail counters and there is a manifest effort not to take on any new business for late deilvery on goods of this character unless it is clear that buyers are able to take in all that is ordered. The call for poplins is steady and a fair business has been done on shirtings that sell under 14 cents per yard. The higher priced goods are feeling the effect of foreign competition.

Satin quilts continue in good demand. There is but a very light demand for the cheaper crochet quilts and stocks of these goods in the markets are plentiful enough to meet any ordinary demand for some time to come. Some of the low priced yarn dyed crinkled quilts that were popular last year are to be had at concessions in the markets now and mills are running off of them in some important instances.

The sentiment concerning the future of business is very much mixed in the manufacturing centers. There are several mill men who feel that when the new banking law gets into running order and the full effects of the tariff have been discounted, say by the middle of the year, there should be a resumption of large buying. There are other men who are of the opinion that cotton from a new crop will not bring the prices seen this year and they anticipate a dragging market for the months preceding the discounting of what a new cotton crop will be. They declare that the market is already discounting lower cotton prices long before such prices can be enjoyed by the manufacturer and until a new crop is grown they anticipate an inability to show a satisfactory profit based upon cotton they are forced to use.

While most of the protesting against the methods of the New York Cotton Exchange, whereby spot prices are fixed on a parity below the prices spinners are actually paying for usable cotton, has come from Southern points, it can be stated that a great deal of feeling exists in New England against the same methods planters are crying out against. Buyers of goods insist upon pricing cotton as the New York spot quotation is priced, and they look for cloth prices that harmonize with New York middling up land contracts, rather than with the cotton that is bought at Memphis, Vicksburg, and other large trading centers. As a result the mills are being squeezed during this year of a preponderance of low grades and they will welcome any action that looks toward making New York quotations mean something nearer what the spinner must pay for his raw material.

A business man in England informs an American consul that he would like to get in touch with American manufacturers of cheap waste cloth (duck), weft and warp double, similar to a sample which may be obtained from the Bureau of Foreign and Domestic Commerce. This sample is said to be absolutely free from size, and therefore largely used for the construction of engine packings, etc. This firm requires 100 rolls of 80 to 100 yards each, 53 inches wide. Samples with prices should be submitted without delay. Refer to file No. 12,488.

COTTON CROP CONDITIONS AND A REVIEW OF THE MARKETS.

BY H. AND B. BEER, NEW ORLEANS.

The movement to market indicates that this season's crop has been underestimated to the extent of about 500,000 bales, the commercial yield now pointing to about 14,500,000 bales. Owing to this feature and the large quantity of low grade cotton pressing on the market, especially in New York, futures have ruled weaker than spot cotton of late.

To February 13th of this season 12,109,000 bales were marketed compared with 11,428,000 to the corresponding date of one year ago, an excess over last year of 681,000 bales. If the South should market as much cotton after this date as was marketed after this time last year, this season's crop would be much larger than generally expected, or about 14,848,000 bales.

It is thought, however, that the crop is not much, if any larger than 14,500,000 bales, and owing to the rapidity with which the cotton was moved to market, there is considerable less to market during the remainder of this season than was marketed after this date last season. This assumption, and the fact that desirable cottons are scarce, has maintained confidence in the belief that higher prices will be witnessed eventually.

The export movement to Europe continues free, the total shipments from all United States ports since September are larger than to even date last season, 6,580,000 bales against 6,506,000, and the quantity on shipboard at all ports is about 100,000 bales larger than it was at this time one year ago. Indications are that the season's shipments to Europe will total about 9,000,000 bales against 8,611,000 bales last season.

In the meanwhile the American mills continue to consume cotton at a record breaking rate, having consumed 541,000 bales in the month of January, compared with last year's record of 533,000 bales, and the total consumed in the United States during the first five months of the season was 2,519,000 bales vs. 2,403,000 for same time last season.

On January 31st of this year mill stocks in America were 1,851,000 bales against 1,913,000 one year ago, and the number of spindles in operation were 31,113,000 compared with 30,336,000 last year. It is evident, therefore, that since reports are to the effect that manufacturers are well supplied with business for some time to come, and as stocks of manufactured goods are small, consumption in the United States will probably continue on a record breaking scale during the balance of the season. In that event the consumption in the United States this season will be close to 6,000,000 bales.

These deductions lend color to the claim that the world will consume about 15,000,000 bales of American cotton this season, which can only be made possible by spinners using up more of their already low reserves, as it is not thought probable that this season's crop will be anything like 15,000,000 bales, perhaps not by 400,000 or 500,000 bales.

In this connection prospects for the next crop will play an important role in shaping the future course of values, as with spinners' reserves reduced to the minimum, and the world needing over 15,000,000 bales for actual consumption, and 1,000,000 bales additional to replenish depleted stocks of the raw material, it is plain that the South will be called upon to produce at least 16,000,000 bales of cotton this year, something that has only been accomplished once in the history of the staple.

Preparations for the new crop, so far, are well advanced in the central and eastern portions of the belt, and have been pushed along in Texas and other sections of the southwest where farm work was delayed this winter owing to the rains and floods to the west of the Mississippi river. But there is not much heard of increasing the acreage extensively. Advices are to the effect that there will be some increase in all sections of the South, but that the increase will not be large. Under the circumstances perfect weather conditions will be necessary for making 16,000,000 bales this year, but the elements are too uncertain to rely upon.

THE KNIT GOODS MARKET.

The knit goods market for the past month, has been quiet, although the mills are all busy and prospects fairly good. While advance business is not coming in a large way, agents for leading lines of staple cotton hosiery report some improvements over last month. The total for the year is reported to be considerably ahead of the total for last year during the same period. The fall business is largely a continuation of the spring and summer trade and the orders received represent largely duplicates of those seasons. Jobbers, as a rule, are not anticipating their wants in a large way, but are taking the usual amount of the numbers which are regular features of their line.

Agents for lines of German hosiery report some improvements in business, but no great development in this business has been observed, as was looked for under the new tariff rates. As taken in all, the volume of foreign made goods so far is not very impressive.

The underwear situation still remains on a comparatively quiet basis, although a report from the middle west recently indicated that the last month has witnessed the moving of a large volume of stock from the retailers shelves and indications are that the closing of the season will find the retailer obliged to practically stock entire, which should result in the better business in the primary market.

One of the important questions confronting the hosiery manufacturers, is whether or not the use of artificial silk in hosiery is going to replace the mercerized combed yarns. Some of the yarn men expressed themselves as feeling that fine mercerized cotton yarns are going to be again in demand for hosiery lines and this feeling is based on the belief that artificial silk is not going to give satisfaction. Some claim that the artificial silk has only a short life as compared with mercerized cotton yarns when made up in fabrics and that the result will be unsatisfactory to the wearer. On the other hand, however, it is claimed by some who have made tests along these lines, that the artificial silk will stand washing and wearing in a manner equal to mercerized cotton. The outcome of this controversy as to whether or not the use of artificial silk is to be merely a fad, remains for the future to determine.

It is perhaps worthy of note, that as the month closes, the situation in heavyweight underwear indicates that the carry-over will probably be heavier than usual. Buyers, it is reported, are placing only light initial orders for next fall, and particularly buyers from New England indicate that many ladies' lines on heavyweights will be carried over. There were continued reports of specifications being delayed by jobbers and it is probable that the heads of

mills and selling agencies, may in the future, instruct their salesmen on the initial trip to take more time to secure the details of the orders, so that such orders will be filled with a certainty and put up to the purchaser for acceptance. The open orders for this season have proven very unreliable. The price situation continues very firm and it is impossible to see what more jobbers can look for from mills in this respect, since manufacturing costs are steadily increasing.

THE YARN MARKET.

The yarn market for the past month has not been as good, taken as a whole, as was the month of January. Beginning with spotty trading, the month ended inert in many quarters. The beginning of the month found prices up and spinners bullish, while some sales were being made on the higher level. Manufacturers of carded yarn hosiery were calling for yarns, while combed yarn was in fair demand for singles. Two-ply's, however, were very slow. Weavers bought principally for quick delivery, and a few bought with deliveries running into April.

As the month wore on the prices tended more toward the top and it was rather a hand to mouth business in nearly all lines. Spinners were showing dissatisfaction with the selling methods and many discussions took place as to how to eliminate the speculator. The persistent rumor of the lack of white cotton, which has been going the rounds, is looked upon by yarn dealers and buyers as a good deal of a ghost story. Even some of the spinners expressed themselves as believing that some of the planters are holding back their best grades of cotton for future sale and delivery. There is an honest difference of opinion on this question, however, and many other spinners believe that the statements in regard to the scarcity of white cotton are absolutely true. Knitters continued to buy carded yarn for quick delivery and the moderate demand for single combed peeler continued, although the two-ply still remained rather quiet.

The middle of the month found business continuing rather slow. There was a considerable stock of all kinds of yarns in the Philadelphia market and 40's two-ply warps and skeins had been piling up during the past two or three months. There were reports made during this period of the month that samples of English 40's two-ply carded skeins had been received in the New York and Boston markets and that the price placed on this yarn was 31 cents. If this report is true, it is hardly probable that domestic spinners who have been holding for 32 to 33 cents, will continue to be able to get their price as the buyer would take the imported yarn. However, many doubt the veracity of this rumor. Sales were made at this period as follows: 20's two-ply warps, 23½ to 23¾ cents; 30's two-ply warps, 26¼ to 27 cents; 40's two-ply skeins, 30½ to 31½ cents; 50's two-ply skeins, 37 and 37½ cents; and 10's two-ply skeins at 20½ cents. 20's to 30's frame spun cones were bought to quite a large extent during this period. Sales of 20's were made for 25 cents, while 26's cones were bought for 25½ cents.

As the month closes, it becomes evident that underwear manufacturers will need yarns. They are covered only for the near future and must buy somewhere. There were a few sales for 25,000 to 100,000 pounds, but the volume of business for this period of the month was not at all satisfactory. Combed yarns were not very active, and while the singles were purchased in moderate quantities, the two-ply still continue very slow. Spinners are making unusually strong complaints about the New York Cotton Exchange methods and the Hard Yarn Spinners' Association of the Southern states, forwarded a set of resolutions on the subject. The Memphis and Vicksburg Cotton Exchanges also indicated their disapproval in terms not to be mistaken even by the casual reader. Prices seemed to be on the fence and it is rather a difficult matter to predict what the next few months will bring forth. A petition to place the Southern States Cotton Corporation in the hands of a receiver has been issued according to newspaper reports and charges of alleged speculation on the part of the corporation's officers made. These allegations are, however, strenuously denied and the exact truth of the matter will doubtless be developed later.

Following are recent quotations on the Philadelphia market:

Southern Single Skeins.

8s	19 @20	16s	22 @22½
10s	19½@20½	20s	23
12s	20½@21	26s	24½
14s	21 @21½	30s	26½@27

Southern Two-Ply Skeins.

4s to 8	18½@20½	24s	24 @24½
10s	19½@20½	26s	24½@25
12s	20½@21	30s	26½
14s	21 @21½	40s	30½@31½
16s	20½@21½	50s	37½@38
20s	23 @23½	60s	45

Carpet and Upholstery Yarns in Skeins.

9-4	slack 20½	8-3-4 hard twist	18½@19
8-4	slack 20		

Southern Single Warps.

8s	20	20s	23 @23½
10s	20½	24s	24 @24½
12s	21	26s	24½@25
14s	21½@22	30s	26½@27
16s	22½	40s	32

Southern Two-Ply Warps.

8s	20	24s	24½
10s	21	26s	25
12s	21 @21½	30s	26½@27
14s	22 @22½	40s	32
16s	22½@23	50s	38
20s	23½		

Northern Two-Ply Carded Peeler Skeins.

20s	25 @25½	36s	29½@30
22s	25½@26	40s	33
24s	26 @26½	50s	38
26s	26½@27	60s	46 @47
30s	27½@28		

Two-Ply Combed Peeler Skeins.

20s	30	50s	44 @45
24s	31	60s	48 @51
30s	33 @33½	70s	57 @60
40s	38 @40	80s	67 @69

Single Combed Peeler Skeins.

20s	30½@31	40s	40
24s	32	50s	46 @47
30s	34 @35	60s	53 @54

Southern Frame Spun Yarn on Cones.

8s	20½@21	20s	23½@24
10s	21 @21½	22s	24 @24½
12s	21½@22	24s	25
14s	22 @22½	26s	25½
16s	22½@23	30s	27 @27½
18s	23 @23½		

Northern Mule Spun Carded Yarn on Cones.

4s to 8s	21½@22	20s	24½@25
10s	22 @22½	22s	25 @25½
12s	22½@23	24s	26 @26½
14s	23 @23½	26s	26½@27
16s	23½@24	30s	28 @28½
18s	24 @24½	40s	33 @34

Northern Mule Spun Combed Peeler Yarn on Cones.

10s	27½	22s	30½@31
12s	27½@28	24s	31 @31½
14s	28 @28½	26s	32
16s	28½@29	30s	35
18s	29 @29½	36s	37½@38
20s	30 @30½	40s	39 @40

The total quantity and estimated value of cotton exported from the various West Indian colonies for the cotton year October 1, 1912, to September 30, 1913, was 2,154,475 pounds, valued at $678,152, as against 2,656,423 pounds, valued at $805,357, for the previous year. The report of the Imperial Department of Agriculture states that there was exported, in addition to the above, 459,460 pounds of Marie Galante, or short staple cotton, but gives no estimate of value.

COTTON MANUFACTURING.

TRACING THE CAUSES OF DEFECTIVE CLOTH.

BY WILLIAM SHAW.

At the present time, with modern cloth room machinery and attachments, we can obtain good service in removing motes, leaf, etc., from the body of the cloth. However, there is a certain amount of impurities that adhere to the strand of roving and cotton thread while in process, that cannot be removed by cloth room machine attachments, such as shear blades, brushes and emery rolls, without injuring the defective threads and also the smooth face of the cloth.

The object of this article is to point out how such defective places in the cotton thread can be eliminated to a large degree by eternal vigilance.

As a rule, buyers of cotton cloth are more particular when the market is in a glutted condition, and as we are facing the results of a cotton goods tariff which will surely create a more direct competition with the other cotton manufacturing countries of the world, a glutted market must be expected henceforth, unless we get together and strive to make better cloth.

There is one point I wish to convey to every reader of COTTON, and that is that the law of compensation is never still, and that it works in the cotton industry as it does elsewhere. What is done is paid for. For instance, we often hear mill pilots boast of their carder keeping down the percentage of waste; that hardly any fly can be found in the droppings under the card. Do they never stop to think that the short impurities and fly are mostly responsible for making the cloth into seconds? So, as stated, the law of compensation is at work in every cotton mill, and should be studied.

If a card is set so as to extract the seed, leaf, and dirt only, and allow the fly to go through the card, this short staple is sure to escape from the strand or thread from one process to another, which will collect in clusters, and by draught or otherwise adhere to the strand or thread, which result can be easily detected in the finished cloth. The good carder is the one that can extract from the fringe of cotton, the undesirable fibers, or in other words, fibers too short to be worked alongside those of a greater length, for the reason that the drawing rolls will not act on them and thus allow them to escape from the body of the roving or yarn.

I always judge a carder by the looks of the roller beams in the carding, ring spinning, and mule rooms. However, in justice to many good carders, it must be said, that many are forced to set their cards so as to decrease the percentage of fly. How does this come about? It is this way. In the largest cotton centers such as Fall River, New Bedford, and Lowell, it is a practice among a few superintendents, agents, and treasurers, to exchange their card droppings, and the droppings having the least fly receives the most commendation.

Not long ago a treasurer stated before the National Association of Cotton Manufacturers that the mistakes of the mill man are hidden six feet in the waste bin. He gave us a good point, but if he had considered the law of compensation, and defined the waste bin, his statement would have borne more weight. I will say without fear of contradiction that when the fly waste bin is increased the percentage of cloth seconds in the cloth room are decreased, and I think the reader will agree with me after studying this article.

I will now picture myself as a person looking over the cloth in the cloth room, and in each case will describe the nature of the defects and also suggest how to eliminate such defective places. When inspecting cloth, I have a method I call my own, although others may do likewise. On the upper part of one of the cloth room windows I have a wooden roll fastened and free to revolve, over which I pass every yard of cloth found to be defective. By having the cloth between myself and the light, every bit of undesirable matter is exposed clearly.

As regards cleanliness, the grade of cloth varies every little while, and I am going to show here how many mill men unconsciously deceive themselves. When cloth is found to be coming more dirty than usual into the cloth room, in many cases the superintendent or treasurer will immediately go to the mixing room and examine the stock. They seem to forget that the dirty cotton responsible for the dirty cloth found passed through the pickers at least a month previous to finding the defective cloth. When I notice the cloth coming in dirty I always examine the following parts of the carding machinery:

(1) I examine the back of all the cards to see that as little air as possible enters the card.

(2) I press the working flats in the center of each card to ascertain of they are set as close as they should be. If I find that by pressing the center of the flat slightly, no contact is made with the wire of this flat and the wire of the cylinder, I order the card stopped immediately and reset.

I do not mention the picker bars in the picker room as I find in most mills that the bars are opened for dirty cotton and slightly closed for cleaner cotton.

When cloth is found very rough, the cause, in almost every case, can be traced to the card and to the two parts described, that is, if the warp yarn is not sized too hard. But when I say rough, I mean, the face of the cloth rough from dirt in the body of the yarn. This fact is nothing new to most readers of COTTON, and simply mentioned here to cover the subject more fully. However, the most difficult defect to locate is bunches in the yarn.

There are many causes for bunches in the yarn. But how bunchy yarn finds its way to the loom in the majority of mills, is something I could never understand.

In the most of the mills I have had the pleasure to visit (and I have visited many) I find the common practice of inserting a colored string on the side of the cloth where a defective place exists and around the bunches of yarn, a ring is made with a lead pencil or colored chalk. The weaver is called in as a rule and told that the portion of yarn having bunches should have been broken and pieced before entering the harnesss. Why not send for the overseer of spooling? When I find bunches in the yarn, I go immediately and examine the thread guide plate on the spoolers. If the guide plates are sufficiently close, they will

prevent large knots or bunches from passing to the spool. Then why allow the knots or bunches to reach the cloth? This is the reason: I have found spooler guides running 28's yarn with the plates spread wide enough to allow the blade of an ordinary knife to be inserted between them.

Large knots and bunches in the yarn are a great drawback to good weaving and for this reason, many claim that closing the guides too much should not be encouraged, since these defects are things that should be attended to in the preceding processes. Spooler guide-plates, however, are not set sufficiently close in many mills by the overseer of spooling for just one reason—production. A larger production is obtained when the guide plates are set to allow the majority of defective places to pass to the spool, but the law of compensation is at work here also, and what is done at the spooler is paid for by increasing the seconds in the cloth room.

Every mill should have a gauge made for the guide plates running different numbers of yarn, and the guide plate should be gauged every day and at a different time. With the proper gauge, all spooler guides in any 50,000 spindle mill can be gauged within thirty minutes.

Let us now get down to the cloth room again, and let us assume that the writer pulls from the body of the cloth a bunchy portion of yarn inside the lead pencil ring described. I first untwist the yarn and then I place a strong magnifying glass over the knot or bunch of yarn. If I find the bunch to consist of fly, and the bulk on one side of the yarn, I am convinced that the fly came through on the roving. On the other hand if I find the fly to be around the body of the yarn, I am convinced that the fly collected on the parts of the ring frame and as stated, by draught or otherwise, was made to follow and adhere to the body of yarn. Now what can be done to eliminate such places? Some will lay the above to brushing down the ceiling and shafting, etc., while the machinery is in motion.

Of course, it must be admitted that brushing down when the machinery is in motion will cause the falling matter to find its way to the strand or thread, but it should not be forgotten that in most mills brushing down takes place only twice a week, and this would not cause the amount of bunches found in the cloth in some mills.

If desirous of knowing the real cause, watch any speeder tender when she is wiping down the roller beam while the frame is in motion. Next, watch the ring spinner brush the separator, ring rails, and roving creels.

When a speeder tender wipes down the roller beam, she uses a small portion of stripping waste, and she must of course pass this portion of waste back and forth through the ends. Notice how the ends will collect the fly from the piece of waste when put through the ends. In fine mills no tender is allowed to wipe down the roller beam while the frame is in motion; this is done at doffing time when both rows of flyers are removed from the spindles. This is very little trouble and I fail to see why the practice could not be carried on in every mill.

In the spinning room a brush is used to brush down the separator and ring rails. This brush is similar to a paint brush, the bristle being longer and harder. As in the case of wiping down the roller beam in the card room, as this brush is drawn back and forth through the ends the fly on the bristle is collected by the ends and in each case form the defective portions of yarn described under the glass.

Again the law of compensation is at work here, because if the fly, or at least the most of the fly, was taken out at the card, as it should be, so much could not collect on the roller beams, creels, ring rails and separators. Therefore, the period of time could be increased for wiping down. The writer never allows a brush to be used to clean the creels, ring rails and separator. Instead, I have a small stick made similar to that used on warp drawing machines; a wire will do. Glue a piece of flannel on the end so as to cover three inches of the stick or wire. By rolling this covered stick or wire, one can collect all the fly without a single short fiber escaping. Try it.

When I find the cloth full of small white specks (which results from injured and broken fibers) I know that it is something hard to locate. However, the trouble is generally found at the licker-in, between the doffer and the cylinder, or between the paddle and the surface of the bobbin on the fly frames. When the body of the cloth is covered with these white specks go to the card room immediately and look over every web coming from every card in the mill, do not miss one.

When a card is found making these small nebs, stop it at once and examine the licker-in, and it will be found either dull or injured in spots by material of a hard nature. When the saw tooth of the licker-in fillet is dull or injured, it will take the stock around a second time, and cause the fibers carried around a second time to be broken and rolled, which forms the little specks described. If the licker-in is found in good condition on every card, then take a gauge .007 inch thick and gauge every card between the doffer and the cylinder. If the doffer is set too far away from the cylinder many of the fibers are carried around a second time by the cylinder, and the result is the same as a dull or injured licker-in.

There are very few mill men, even carders, who take into consideration how the horizontal presser should be positioned on the surface of the bobbin. Examine the horizontal pressers at the beginning of a set, and they will all appear perfect, but when they are examined after the set is full the evils that their position cause are closely related to many troubles.

The flyer found on fly frames is a more ingenious contrivance than is regarded by most mill men. Any person that has given much time in studying the object of the presser rod attached to the hollow leg of the flyer will admit this.

At the beginning of the set on all fly frames we find the extreme end of the paddle on the surface of the bobbin, a position it should occupy throughout the building of the set. But if the reader is at the helm of a cotton mill and will, after reading this article, trouble himself by going to a fly frame ready to doff and examine all the horizontal pressers, I am sure he will be surprised in the position he will find many of them.

While looking over the pressers, notice also how some of the eyes have gathered the fibers. This is a common occurence. When an end or two is seen running slack on a frame if the frame is stopped and the flyers where these slack ends were running are examined they will be found to either have a clogged hollow leg or a few fibers around the eye of the pad. I have pointed out the above to many mill men and in almost every case I was told that there was nothing to it. I think the following proofs will convince the reader that having only the end of the pad on the surface of the bobbin is very important. The first proof is when a set of roving is run too full. It is well known by all practical carders that the eye of the paddle on some of

the flyers will injure the last layer of roving to such an extent as to require pulling off. The second proof is by finding a presser during the set with the jaw of the upper front side of the eye digging into the surface of the bobbin.

If the reader will examine a fly frame at doffing time he will no doubt find many eyes of the pads in contact with the surface of the bobbin, a condition that should never exist. Examine the pad when the eye is in contact with the surface of the bobbin, and let the following questions suggest themselves:

By the bobbin leading the flyer at all times on the bobbin lead frame, does the side of the eye scrape the strand of roving and cause a few short fibers to be collected and afterward allowed to escape in a cluster?

Does the side of the eye scrape the first or second preceding coils to that of the coil passing through the eye?

To prove the last question, examine all full bobbins and it will be found in almost every case that a few that have been made oozy by the eye of the pad pressing on the surface of the bobbin.

What I am stating here is no guess work, and if the reader will examine the presser pads at doffing time he will find many eyes on the surface of the bobbin that are responsible for some of the white specks found in the finished cloth. When combers are used specks can be found on the body of the strand. The eye of the pad resting on the surface of the bobbin is responsible.

Clearer waste when found in the finished cloth can easily be traced. If the clearer waste is found in the body of the thread, this indicates that clearers in the preceding processes are not kept clean. When a piece of defective yarn is pulled from the body of the cloth and the bunch consists of clearer waste, if examined under a glass the color is enough to convince one that it is such. If the clearer waste is found on the surface of the yarn, this indicates that the clearers in the ring spinning room are not cleaned. I need not say here that when the trouble is in the mule room that every defect is found in the yarn traversing the cloth.

The top and under clearers should be kept well covered and be cleaned at least four times daily, in both card and spinning rooms, or they will allow the waste to be incorporated in the yarn, as stated, which will cause bad work in every succeeding process. As these things can only be kept right by system, intelligence, eternal vigilance, and close attention to duty on the part of everybody concerned, is it not a good practice to watch the spooler guide plates and see that they are closed sufficiently to suit the diameter of yarn passing through?

The hardest thing I ever was up against in a cotton mill is when the yarn is weak and when looking the cloth over you can see threads out both warp way and filling way. Not only from one or two weavers but from almost every weaver. When no change has been made in the draft or twist in the card or spinning rooms, and the yarn is found very weak there is only one cause,—poor stock.

In a Southern mill I once visited, I found that all the waste made in the mill was spread only in the stock for the filling yarn. The mixing bin was divided into three parts, one for the warp, one for the filling, and one for stock of a higher grade. A certain number of laps would be made from the high grade cotton, and one of these laps would be placed with three of the laps made from the filling stock at the intermediate picker. The treasurer said that the change netted the company many dollars, as he said he obtained a much larger production, besides which he was never troubled with weak yarn in the weave room.

In a Northern mill, I found the mixing bin divided in three parts as in the mill just described, but instead of running the higher grade cotton in the filling stock, the agent said that when he noticed the stock coming in fluffy he ordered 25 per cent of the higher grade stock to be run through with the fluffy stock. This was done by having one lap of good stock run with three laps of the fluffy cotton at the intermediate picker. This agent said that the "sparker" for his idea was the making of hard ends by fibers of a greater length in the card and spinning rooms. He said: "If a fiber of good cotton is strong enough to check a leather top roll, I thought that by running 25 per cent of a higher grade stock, that the strong staple of this cotton would strengthen the cross section of the roving and yarn, and I found it to be so." Continuing he said: "I find that the extra cost of the higher grade staple is nothing compared with the results I obtain."

I told him that I agreed with him, and then I pointed out to him that he had overcome also a defect of which perhaps, he was not aware. By using 25 per cent of this higher grade cotton, and strengthening the cross section of the strand, this aided in remedying the unequal condition found on all fly frames. Because, by strengthening the cross section of the strand the pull between the pad and the surface of the bobbin will reduce the diameter of the bobbin instead of stretching the strand, and the relationship between the surface speed of the front roll and bobbin is attained throughout the set. Therefore he would have a uniform thread, and thus the breaking of the threads warp way and filling way would be eliminated.

In looking over the cloth at times, I find every yard almost perfect and marred by only one thread containing large bunches that have been flattened by the slasher presser rolls. These bunches appear in some cases throughout the length of the thread. This is caused by the leather top rolls jumping on the drawing frames. When leather top rolls on drawing frames are highly speeded they will jump occasionally and cause a cut web. A portion of the web will then drop on the casing underneath the web, and be drawn into the trumpet in a bunch.

These bunches are of course drawn down in the later processes, but not enough to prevent a part at least remaining bulky until the last stage of manufacturing. There are two ways to remedy the above evil; one is by boring the trumpet cast with the calender roll covers, and then in the bore insert brass trumpets bored to suit the weight of the drawing sliver only. The small bore in the brass trumpet will not allow the bunch to pass, and the web is broken instead. This leads to the discovery of the imperfect top leather roll which is changed immediately. Another way is to hang the weights of the vibrating rolls on springs or on strong banding.

When I extract a bunch from the body of the cloth and find the bunch to form a loop I know that some speeder tender or tenders are to blame. There is no doubt that many readers of COTTON have noticed speeder tenders place their fingers under a very slack end and give the strand a twist, when the portion over the finger separates and the whole portion is allowed to pass to the bobbin. What does the speeder tender care; she is not aware that she is doing wrong. Her mind is centered on taking up the slack. Pressing the finger on the front top roll would have answered as well, but she does not care to spend the time. The above should be branded as a crime by every carder.

The cloth room is the tell-tale of neglected rolls. How often we find in the cloth a thread having contracted rust. How is this found, and what is the cause?

When the yarn is tinged one-half, this indicates that the under steel rolls on some speeder was neglected, and the roll having contracted rust and then oiled, the rust from the roll stand by the aid of the roll revolving spread over the bars of the roll and to a point where the end was under action. When this takes place in the spinning room, the whole thread appears tinged.

Other bunches that are caused by dirty under steel rolls appear in the cloth similar to that in case of drawing rolls jumping. The only difference is that the bunches appear darker. There is no excuse for dirty under steel rolls, for it is only a matter of a few minutes to clean the under steel rolls when done every week, but of course, if the fly is allowed to collect for months it then becomes quite a job. When scouring frames, I have seen fly and roving collected on steel rolls to such an extent as to require cutting off with a knife.

It is not a very hard job for the overseer or second hand to examine all bottom steel rolls once a week. All that is required is to stoop and look under the rolls on each frame. When this is done every week, the tenders are wise to it and will keep them clean. Thus a great amount of undesirable matter is prevented from passing to the bobbin and afterwards to the cloth.

When looking the cloth over, if I find the yarn to be full of black spots, I know that the chief cause is due to the oiler in the card room putting too much oil on the gears. The oil works to the end of the cogs of the gears and the high speed of the gears throws the oil on the bobbins of the head end of the frame.

In order to be able to trace the defects in cloth, one must have some experience in the preceding processes to that of the cloth room. The superintendent should picture in his mind the passage of the fibers from the breaker picker in the picker room to the loom. Then when the cloth is found defective the following questions will suggest themselves:

Are my bars in the picker room closed enough?

Are my licker-ins in good condition?

Are my doffers set properly to the cylinder?

Are my drawing rolls cutting or jumping?

Are my under steel rolls kept clean?

Are my clearers being picked four times a day?

Are my flyers properly repaired?

Are the rollers well oiled?

Does the oiler put too much oil on the gears when oiling fly frames?

Are the flats on the cards properly set?

And lastly and by far the most important of all, am I taking out the necessary amount of fly from the stock at the card. If not, remember the law of compensation is at work.

In summing up what I have written I wish to state that if the reader is a bit skeptical about what was said in regards the horizontal presser eyes being in contact with the surface of the bobbins, that if the strand of roving is watched entering the drawing rolls on the ring spinning frame or mule, he will notice many small specks on the body of the yarn. Of course, they are only small, and appear larger after being slashed, when sizing is added. However, this is found mostly in mills using short stock.

COTTON STAPLE AND TRADE NAMES.

BY JAMES G. COMAN.

Sea Island—This is a different species of cotton from the upland varieties, and derives its name from islands off the coast of South Carolina and Georgia. The cotton is also grown on the mainland, usually within 50 miles of the coast states named, and Florida, on the West Indies and Fiji Islands, Peru and Queensland. The characteristics are 1⅝ to 2½ inches in length; fairly strong, considering the diameter, the breaking strength being about 90 grains; very fine and very smooth; elastic and of high luster; great number of convolutions, the number ranging from 200 to 300 per inch; due to the long season, very free from immature fibers; soft, but not as even running in length of fiber as gulf or uplands. It is suitable and is used only for the best yarns—namely, very fine, or soft, or strong, or smooth and uniform yarns, such as are used in the production of laces, sail cloths, automobile tires, sewing thread, etc. The breaking strength of Sea Island warp yarns usually represents from 85 to 95 per cent of the total individual breaking strengths of the fibers composing it in cross section. This high per cent is due to the length and great number of convolutions in the fibers.

Sea Island cotton is graded differently from uplands. The grades for that grown on the sea and West Indian islands is as follows:

Extra Fine—Composed of a few crop lots of fancy cotton with staple 2 to 2⅜ inches in length and which sells at between 50 and 65 cents.

Extra Fine—Crop lots—with staple of about 1⅞ inch, and of which there is a much larger amount than of the previous grade. This usually sells at between 30 and 40 cents.

Extra Fine—Odd bags—with staple of about 1⅞ inch, but the lots made up of bags from different farms and consequently not so even running. This sells at between 25 and 35 cents.

Fully Fine—Odd bags—with staple about 1⅝ to 1 11-16 inches made up similarly to the preceding grade and selling at from 23 to 28 cents.

Fine—Odd bags—with staple of about 1½ to 1⅝ inches and selling at between 20 and 26 cents.

Fully Fine—Off in preparation—of the same staple as standard, but, due to disease, insect damage or being left in the fields too long, the staple is weaker, not so lustrous, discolored or is trashier, and as a result does not bring as high a price, usually selling at between 22 and 28 cents.

Fine—Off in preparation—of same staple as standard, but lacking in the particulars mentioned and selling at between 18 and 25 cents.

Sea Island cotton grown on the mainland of Georgia and Florida is graded as follows:

Fancy—With staple of about 1⅝ inches and selling at between 21 and 26 cents.

Extra Choice—With staple of about 1 9-16 inches and selling at between 20 and 25 cents.

Choice—With staple of about 1½ inches and selling at between 19 and 23 cents.

Extra Fine—With staple of about 1 7-16 inches and selling at between 17 and 22 cents.

Fine—With staple of about 1⅜ inches and selling at between 16½ and 21 cents.

Medium Fine—With staple of about 1¼ inches and selling at between 15 and 17 cents.

Common—With staple of about 1⅛ to 1¼ inches and selling at between 14 and 16 cents.

The care exercised in picking and preparing Sea Island cotton for the market and the very rare occurrence of frost in the sections where it is grown are responsible for the small number of grades and the small amount of irregular cotton. As is indicated, the best type of this cotton is grown on the Sea Islands, that grown on the mainland, usually within 50 miles of the coast, being shorter and of inferior quality.

Great care is necessary in seed selection, proper cultivation, etc., in order to keep the length and quality of the fiber to standard, for if the staple falls below 1⅝ inches it enters into competition with the long staple gulf cotton, which is superior in per cent of lint yielded, in general characteristics, and can be raised more cheaply. The prices for Sea Island cotton, as the market and supply are limited, are usually very uniform.

WASTING AND SAVING POWER.

BY H. D. MARTIN.

In all well managed mills the matter of saving power is taken well into consideration by all, from the general manager down to the band boy. And it is a fact that even the band boy can save a great deal of power. It makes a vast difference as to whether the bands are put on more taut than necessary. No doubt a great deal of power is wasted on this account alone. It also consumes needless power if the bands are larger than they should be. Tight belts are another source of power wasting. A great many belts are run tighter than is necessary. Using heavier travelers than required also consumes extra power. Those who doubt the value of these statements may make their own tests and learn for themselves that the difference in consumption of power is worth while taking into serious consideration.

Several years ago a wise manager looked very carefully into all these apparently obscure points. He found that he could spin his work on much lighter spindles. So when he built his mill number two, he specified lighter weight spindles and saved a great deal of power over his first plant on the same class of goods.

He also went into other details. He found that it made a difference as to the size and weight of the bobbins. He reduced the weight of his bobbins in two ways. First, he reduced the diameter slightly. Then he reduced the bearing. The illustrations show how he changed his bobbins. Fig. 1 shows the old style, while Fig. 2 shows the new style bobbin. The new style bobbin saved power in two ways. First it was 100 grains lighter, or of one-quarter less weight than previously. On 100,000 spindles the amount of weight was reduced three-fourths of a ton. As it takes about one horsepower to keep one ton of matter in motion, it is well to reduce the weight of the load in every way possible. But reducing the weight of the bobbin and that of the spindle also reduced the friction and wear and tear of the spindles in their bearings. Altogether this manager saved a great deal of power. He not only saved power, but also oil. It did not need so much oil.

There are many other things which tend to save power. Keeping the machinery clean, level, lined up well, all parts properly adjusted, having a good even temperature that is neither too moist nor too dry. Excessively high speed is also a wasteful consumer of power. In a number of mills, some new and expert modern managers have reduced the speed of looms, carding and spinning machinery and not only saved much power, but also increased the production by a large percentage. Very recently the speed of the engine in a yarn mill was reduced four turns, or about 3 per cent, and the improved running conditions in this plant increased the product over five per cent and it also gave a higher quality of yarns. It will pay the management of any mill, who have not made a special object of studying the relative power conditions broadly, to look well into this interesting problem.

There are many other interesting engineering problems which are intimately related to this subject. Such as the proper consumption of coal, sufficient insulation of steam piping, good fuel, modern engines and expert handling of the vast details. It has paid many plants of late years to scrap their old power plants, centralizing a new one and substituting the smaller electric groupings. And so this question of power losses and conserving its energy is a broad study. Many a good man has come along and saved his big salary by the power he saved from what was formerly wasted.

One mill lost several horsepower for years through the simple neglect of not having an adjustable oil cup on a bearing. This oil cup had been removed and its replacement forgotten or neglected. The oiler preferring to go and "spill" oil into the oil hole personally, than to take the trouble of adjusting and watching the adjustable sight feed cup and replenishing it from time to time. This air vent broke the suction column and caused this serious loss. The passage of air following between the shaft and bearing into the wheel case or water chamber.

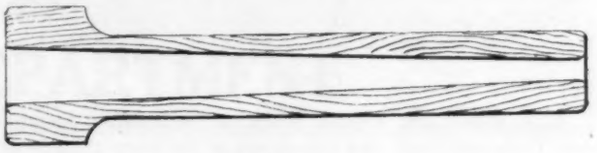


FIG. 1

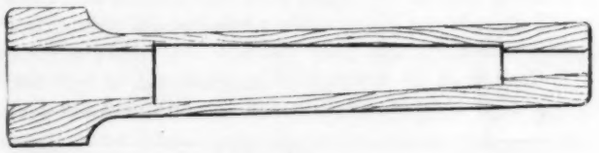


FIG. 2

Another case was when the draught tube of one of the water wheels extended too far down into the tail race, thus preventing the right out-flow of the water and causing back pressure. About 18 inches of this tube was cut off and a great improvement made in the power. This plant was short of power and was contemplating the installation of a larger engine to replace the smaller one, used as an auxiliary to the water power which was supposed to be inefficient. After the defects mentioned were removed there was actually a surplus of power instead of a shortage.

Another simple matter which is often overlooked is the weighting of top rolls throughout a mill. In some mills there is too much weighting of leather covered top rolls, on

drawing, roving and spinning machinery and this will in turn waste power and also cause undue wearing of the steel roll necks.

DESIGNS OF FANCY COTTON FABRICS.

BY THOMAS WOODHOUSE AND JAMES IRELAND.

PART EIGHT.

Fig. 33 shows at A and B two striped fabrics in pale green and white. Pattern A can be woven with the ordinary 4-thread twill 2/2 as the weaving plan. This is shown at E in Fig. 34, in which C and D are respectively the complete design and the draft of the harness. The arrangement of the warp thread is as follows:

White	2	4	3	4	2	= 15
Pale Green	4	12	13	4		= 33
Threads per repeat						48

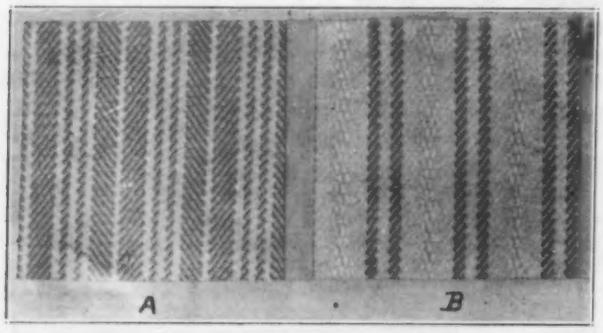


FIG. 33.

This would not appear to be an economical method since there are more than two-thirds of the warp threads to be dyed. In spite of the preponderance of color the effect is pleasing because the green is of a delicate tint. There are 72 threads per inch in the warp and 52 white filling picks per inch

Referring to the design C, Fig. 34, it will be seen that two pairs of threads, the 10th and the 11th, and the 22nd

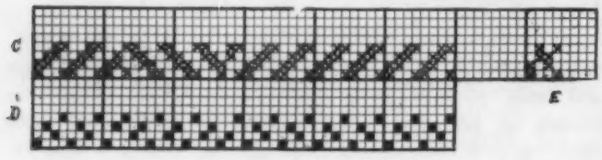


FIG. 34.

and 23rd, work opposite to each other, and that the twills change their directions at these points. This method of employing cutting threads insures that neither the warp nor the weft shall float over more than two threads or picks in succession, as would be the case if the twill were reversed in any other way. This latter method is not always considered to be a disadvantage, and may be used, if preferred, when the warp threads predominate largely over the filling threads. If the number of threads per inch is about equal to, or less than the number of picks per inch, it is safer to turn the twill by means of a cutting thread as is done in this example. In designs such as this a large field is presented to the designer, for he may, with a judicious change of twill direction and a suitable arrangement of colored threads, develop a large number of different designs which could be easily and expeditiously reproduced in cloth.

The colored stripe arrangement in pattern B, Fig. 33, is much simpler than that at A, and there is little more than one quarter of the warp in dyed threads. The order of warping is:

White	3	28	3	= 34
Pale Green	6	6		= 12
Threads per repeat				46

and there are 68 threads per inch in the warp and 52 picks of white filling per inch. The design, draft and weaving plan for this cloth are shown at F, G and H in Fig. 35. The solid marks in the design represent the 8 central threads of the broad white stripe, and these 8 threads weave in the 4/4 basket order. All the other threads

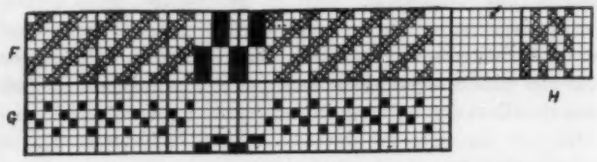


FIG. 35.

weave 2/2 straight twill to the right. The introduction of the 4/4 basket into the cloth naturally increases the number of picks in a repeat of the pattern to 8. The cloth could be woven with a negative or positive tappet made according to the weaving plan at H with 8 picks to the round, or the twill part may be produced with the ordinary 2/2 twill tappet, 4 picks to the round, and the basket threads by two scroll tappets on the same shaft.

Two elegant striped patterns are illustrated at J and K, in Fig. 36, both of which, with a slight alteration of the

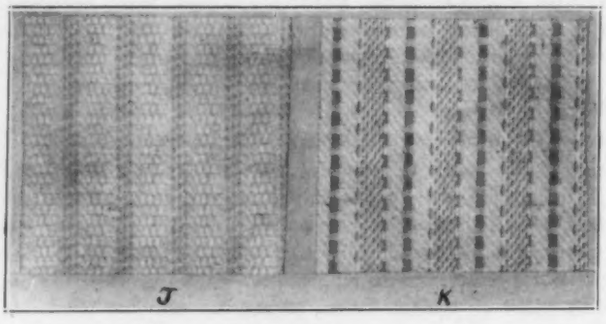


FIG. 36.

warping and drafting particulars, may be obtained by the use of the same tappets and harnesses as those used for pattern B, Fig. 33. The warp for pattern T is arranged as follows:

White	10	1	1	10		= 22
Pale Blue	2	2	2			= 6
Threads per repeat						28

There are 68 threads per inch, and 54 picks per inch of white filling. In Fig. 37 the design, draft and weaving plans for this cloth are shown at L, M, and N. The solid blocks in the design represent the pale blue threads which twill to the left. With this 2/2 twill to the left, and the 2 and 1 coloring, there is a decided tendency for the general effect to appear to twill to the right at an angle of about

30 degrees, although the actual angle formed by the twill is 45 degrees when there are equal numbers of threads and picks per inch. This effect is not very pronounced in this example, but if the 2 and 1 order be spread over a greater width, this right hand twilled effect, due to the order of the colored threads, is very apparent and very pretty.

The cloth illustrated at K is another example produced by combining the 2/2 twill and the 4/4 basket weaves, but

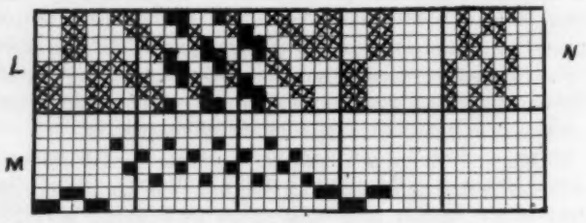


FIG. 37.

three colors of warp are used in conjunction with white filling. The warp is arranged thus:

White	1 1 1 1 8 8 2 1 1	= 24
Pale Green	1 1 1 1 1 1 1 1 1 1 1 1	= 11
Pale Green	1 1 1	= 3
Threads per repeat		38

This cloth, although quite different in appearance from cloth J can, nevertheless, be woven with the same tappet. Again the 4/4 colored threads are represented by solid marks in the design O, Fig. 38, while the draft and weaving plan appear at P and Q. The one and one warping effect in the pale green and white threads forms a very pretty combination in the cloth, although no similar effect appears in the design. The number of threads and the number of picks are the same as in the last example.

The advantage of being able to weave a large selection of designs by the same mechanism or apparatus cannot be overestimated by the designer, for when such conditions prevail the cloths may be produced at a maximum rate and at a minimum cost. It will be noticed that patterns B, J and K conform to this principle, as all three are capable of being woven with the same tappet.

The drafts in Figs. 34, 35, 37 and 38 appear more or

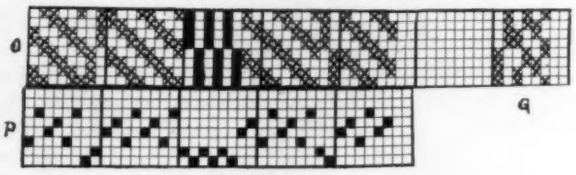


FIG. 38.

less complicated in those parts where the twilled threads are; this is on account of the arrangement of the blades of the tappet for the weaving plan—an arrangement which seems to be most suitable for the top roller mountings of the loom. A very much more simple draft would be required if the blades of the tappet were arranged in straight order as in the twill itself. With such a change in the weaving plan, all parts of the draft for the twills would be straight, *ie.*, 1, 2, 3, 4 for right hand twills, and 4 3, 2, 1 for left hand twills.

(To Be Continued.)

KNITTING DEPARTMENT.

THE BRANCH MILL A SOLUTION OF THE LABOR PROBLEM IN THE KNITTING TRADE.

BY OBSERVER.

The chief problem of the average manufacturer is that of labor. This, it will be admitted without much argument, is a fair statement of the situation. Many a manufacturer is limited in his operations in the exact proportion to the available supply of labor; and that being the case, the solution of the labor problem means, in large measure, the answer to his chief manufacturing question.

Efforts are usually made to develop all of the labor available at the location of the mill. When the supply is exhausted, increasing the business of the plant becomes a matter of impossibility. There are plenty of mills in the Central South and through the Ohio Valley which are compelled to operate at less than three-fourths of their capacity simply for the reason that they are unable to get labor.

In the case of the large concern operating a spinning mill or a weaving proposition, where power requirements are great and the variety of the equipment needed demands concentration, there is no possibility of reaching out and by dividing the business up into units, so to speak, gain greater supply of labor than is available at any one point. But this is not only possible but exceedingly practicable for the concern engaged in the knit goods branch of the business, for example, manufacturing hosiery or underwear either on a large or moderate scale.

This has been successfully demonstrated by a number of concerns which have put this plan into effect. After exhausting the labor supply of the town in which the main plant was located, they have logically turned their attention to some other community where no competing industries were operating, and have succeeded in establishing branches provided with an adequate labor supply culled from the town in which the branch mill is located.

The advantages of this plan are obvious, but so also are the disadvantages. The concern continues to expand and is able to make more goods, of course; but at the same time the close supervision of the manufacturing operations, which is to be desired by the progressive member of the trade, is made almost impossible. It is necessary to rely entirely on foremen or superintendents appointed for the local plants which are beyond the reach of the head of the business.

This has not proved as big a drawback as might have been supposed, however. Good men can usually be secured without much difficulty, and since their problem is purely and simply one of operation, without the multidinous financial, executive and selling details which are loaded onto the shoulders of the average manufacturer, they are able to make an exceptionally good showing, as a rule, and to keep the quality and quantity up to the right figure without increasing the cost of manufacture. The experience of a

number of knit goods men, especially in Tennessee, where the experiment has been given more than passing attention, has demonstrated the large possibilities of the situation.

The establishment of the branch mill involves, of course, consideration of the teaching question in a more careful manner than is usually necessary where the beginner starts in a mill full of experienced operatives and can pick up the work without much difficulty by observing the methods of those around her. In this case all of the employes, to start with, are green hands; and the owner must distribute the veterans from the main plant among his branches until the new hands can be trained to a point where they operate the machines efficiently and satisfactorily.

Many textile men have complained of the difficulty of getting their employees to undertake to teach others in a really serious and intelligent way. In most cases, however, it is found that the inducement is seldom made sufficient to attract the girl, and consequently her interest in the beginner is usually rather negative. In the cases noted, the operatives sent to the new mills have been given exceptionally high wages, in view of the difficulties and importance of their work, and have entered into it with sufficient ambition to result in the beginners mastering the details of the work in a surprisingly short time.

One of the biggest advantages possessed by the Southern manufacturers in this connection is the almost universal availability of cheap electric power. The establishment of numerous water power plants has resulted in the transmission lines of the various operating companies touching practically all of the communities within a radius of several hundred miles, including even the towns of lesser importance; and this fact, of course, has simplified the problem of the man with a branch mill project on his hands materially. He knows that he will not have to invest in a steam power plant for each of his branches, but that a few motors are all the power equipment he will need. In other words, his power plant can be picked up and carried about without difficulty, within the limits set by the wires of the power company. And even where the water power companies have not built their lines, the local central station, which is now found in almost all of the prosperous towns of the South, will make electricity available, even though the rates may possibly be higher for current produced from a steam plant than one of the hydraulic variety.

The main plant can be used for finishing the goods, as steam is required for this operation, the result being that no boiler equipment need be provided for the branch mills. The latter simply perform the machine work, sending in the goods to the main mill for dyeing and finishing. In this way the manufacturing operations at each branch are made as simple as possible, thus adding to the efficiency that can be secured when good men are in charge of them, and with employees who have been carefully trained during a sufficient period by experienced operatives.

A corollary of the branch plant idea, and one which, as a matter of fact, is involved with it, is that the small town is being made the seat of most new operations, especially in the knit goods line, rather than the larger communities. This is because of the labor aspect, since in the smaller communities, where manufacturing enterprises are new, there is little or no competition for labor, and the textile operator can have practically the entire visible supply. In the larger towns, where the total number of possible employees is apparently large enough to supply the mills with all the labor needed, the demands of the stores, factories and other employers are so great that by the time the mill is reached—usually it is put at the foot of the list in point of desirability—there are few worth-while employees left.

Consequently the small town, with its fresh woods and pastures new, as far as labor is concerned, is the ideal location for the mill-owner, unless his requirements are obviously so great that the community cannot supply him. But in most cases he can count on getting close to 100 per cent of the unemployed population, and as the work in an up-to-date knitting mill is agreeable and light, it attracts many who would probably not consider taking employment in a textile plant of some other type.

Ultimately there is almost certain to be competition for this desirable labor, but since the mill was on the ground first it can usually hold most of its employees. Many of the hosiery mills in Eastern Tennessee have been able to expand their operations by means of using branch mills to such a point that their production has been tremendously increased; and this method is now being given consideration by practically all members of the trade who desire to increase their production and are held back by lack of suitable labor.

"In establishing branch plants," said a well-known hosiery man, "the things to bear in mind are first, convenience of location with reference to the main plant. It is a good plan to consider the first mill as a center, and to locate other mills at nearby points within a radius of five to fifteen miles. This is not only desirable on account of the greater ease of supervision and inspection, but also in saving transportation expenses in handling goods between the branches and the main plant. The second thing is to study the possibilities of each town carefully before entering. Usually the community is anxious to get a new industry and will provide a site, assist the manufacturer in getting his force together and otherwise assist him in getting started. Exemption from taxation for a number of years is also granted to such a plant, whereas if it were merely an addition to the old this privilege would not be enjoyed. The really important thing to remember, however, is care in the selection of teachers for the new hands. With proper instruction, a few weeks will suffice to make the beginners reasonably effective, while slipshod methods will cause continual trouble thereafter."

WHY NOT A KNIT GOODS SUPERINTENDENTS AND OVERSEERS' ASSOCIATION?

EDITOR COTTON:

I have been thinking for a long time that an association of the hosiery superintendents and overseers would be of great value to all concerned with the business. We could have an annual meeting and at this meeting we could discuss matters of importance and non-importance just as other associations and conventions do. This as I see it, would be of great benefit to us as superintendents and overseers, and not only to us, but to the manufacturers as well, for what we would do would be for their benefit as well as for ours. Such an association would bring us in closer touch with each other and we would learn a great deal that we do not now know. But someone has said that "there are some who think they know it all." That was well said, and for the benefit of those who have this supernatural gift, we would not make attendance at these meetings com-

pulsory. A man once said that "when a man gets to where he can learn no more the best thing that could be done with him was to shoot him, for when he reaches that point he is worthless to himself and to the world, and should be put out of the way and give some other fool a chance."

There are many men who know something, who can and will help the other fellow. When I say men, I mean men, in the fullest sense; men who are broad-minded; men who are big-hearted; men who are free-spirited; men who are liberal enough to give the other fellow credit for knowing what little he does know; and men who are ready to help the other fellow out of a hole. I have known men (?) who were so stingy they were afraid to talk, fearing that the man next to them in position would learn some of their secrets and thus become equipped to replace them should the occasion seem to demand it. I will add this—if you watch you will notice this kind of man is usually succeeded by the man who is under him, and justly so, because the one who holds the higher place ought, with the advantage he has, be able to look far enough ahead to keep what he has attained over the other fellow. If he can not do that, then there is something radically wrong, and he should be kicked out and let the man under him have a chance. But I have wandered away from my subject a little. There are men who would be glad to help anyone, and men of this calibre are the men who usually know what they are talking about and can bring things to pass in the mill.

This type of men are the ones who make the world go. These are the men on whom the progress of the world depends. Of this type we have many in the hosiery business of the country, and while they may not be known and read of the world over, their influences for good are being felt throughout the country in the manufactured goods they are turning out. These are the men who are everlastingly working for their employer and the ones who can be depended upon for results. These are the men who have made the hosiery business what it is today and through whom if it is to attain a higher standard of quality, it must be attained.

I think an association of the superintendents and overseers carried on in a business like way would mean much to the hosiery business. It will help to make a higher standard of efficiency among those superintendents and overseers which is very much needed. We have too many today who are inefficient in some matters. For this reason I think it is high time that measures of some kind be used to rid this extended enterprise of some of the abuses which are handicapping it every day. And it is up to the superintendents and overseers to rise up and say we will put a stop to it now and forever. We will lose nothing, but gain much. I would like to see other opinions expressed in these columns, for I verily believe we in the South are on the verge of a great era in hosiery making, and we should be on the lookout and alert to the things that are coming to pass every day. We must be if we expect to keep pace with other lines of manufacturing. I do not mean to say that we are behind in our methods or even our finished products, but there is always room for improvement, and hosiery manufacturing has not reached its highest standard. This is one reason for an association, where we could meet and exchange ideas. "Not to beat the other fellow, but to help him," should be our motto. It has been said of hosiery men, that they are narrow toward each other. I think this is a mistaken idea, and I feel sure the time will soon come when the men who are making hosiery today will come to their sense of duty, and do the things that will bring higher honors and a wider field for their chosen vocation of manufacturing knit goods.

Pete. (North Carolina).

YARN CALCULATIONS FOR KNITTED FABRICS.

BY HENRY K. DICK.

Knitting yarns are numbered according to certain recognized standards. All yarns are denoted by count or number. The standard used in numbering depends upon the fiber from which the yarn is spun. Cotton, wool, silk and linen have all different systems of numbering. Herein lies the difficulty for knitters. Two yarns numbered on different systems are used together in a fabric and the knitter or manufacturer may desire to know what is the size of the combined yarn or he may want to know what percentage of each yarn is used. This subject is not a new one but it is hoped that a few suggestions may be conveyed to the reader which will be of service. The table gives the most important of the numbering systems.

Yarn.	Unit of Length.	Unit of Weight.
Cotton	840 yards	16 ounces
Worsted	560 yards	16 ounces
Woolen (Run system)	1,600 yards	16 ounces
Woolen (Cut system)	300 yards	16 ounces
Linen	300 yards	16 ounces
Spun Silk (For single yarns only)	840 yards	16 ounces

Method of Reckoning:—Number of units of length contained in the given unit of weight is the number of the yarn.

In addition to these systems may be added the two most important of the systems for numbering silk.

Denier System. Weight of 520 yards in deniers gives the number of the silk in deniers.

Dram System. Weight of 1,000 yards in drams gives the number of the silk in drams.

To make the subject a little more clear, it might be well to give the trade names to the different units of length. The unit of length in cotton and worsted is known as a hank, in woolen as "run" or "cut" and in linen as "lea." Cotton yarns are numbered according to the number of hanks of 840 yards each contained in one pound *e.g.*, a 16's yarn has (16 x 80) 13,440 yards in 1 pound.

Worsed yarns are numbered on a basis of 550 yards to the hank and the number of such hanks contained in 1 pound denotes the number of the yarn. A 20's worsted has (20 x 560) = 16,200 yards per pound.

Woolen yarns are numbered on two systems, known as the "run" and the "cut" systems. The run system has a standard length of 1,600 yards in 1 pound. A 4's run woolen yarn will have (4 x 1,600) = 6,400 yards in 1 pound. The "cut" system has 300 yards to the "cut" and the number of such "cuts" contained in 1 pound gives the number of the yarn in cuts. A 14's cut woolen yarn would have (14 x 300) = 4,200 yards per pound.

To find the size of a yarn, we would use that system by which that particular yarn is numbered. In reeling off a length of yarn to find the number, a length of 840 yards would necessitate making a lot of waste, so we take a much shorter length. In cotton yarns a length of 120 yards is usually taken and as 120 is 1/7 of a hank we

must use an equivalent weight. One thousand grains is usually taken and the weight in grains of 120 yards divided into 1,000 gives the number of the yarn. A formula which would apply to any length of cotton yarn is as follows:

$$\frac{\text{Number of yards} \times 8\frac{1}{3}}{\text{Weight in grains}} = \text{Number of Yarn.}$$

A similar formula can be used for worsted yarns by substituting a constant of 12½ for 8⅓. Other constants can be found and made use of for the various other yarn numbering systems.

As knit fabrics are not always knitted from one yarn, but very often are made up by a combination of different yarns, silk and wool, cotton and silk, wool and cotton, etc., are to be found together in the same fabric. When two yarns of different kinds are used, it is often desired to find the resultant number of the combination of the two yarns. A fabric is made from 16's cotton and 24's worsted and we want to find the resultant number of the combination of these two yarns. First of all we would have to obtain the equivalent size in the cotton system of the worsted yarn or *vice versa*.

To change from one system into another is a very simple problem. Multiply the yarn number by number of yards in its own hank and divide by the number of yards in the hank of the system required. To change 24's worsted into cotton number,

$$\frac{24 \times 560}{840} = \text{16's cotton.}$$

In this example 24's worsted run with 16's cotton, gives us two yarns of the same size. The yarn numbering 16 and the number of ends used being two, the resultant number of the yarn would be 16 divided by 2 equals 8. A number 8 cotton yarn would equal in size the combination of 16's cotton and 24's worsted.

Another example which is of great importance is for instance a fabric is knitted from 40's merino (50/50) and 40's cotton and we wish to find the percentage of wool to cotton. A 50/50 merino yarn contains 50 per cent of wool and 50 per cent of cotton, but with the addition of a 40's cotton we upset the percentage of wool and cotton. To obtain the percentage, an equal length of each yarn must be taken.

$40 \times 560 = 22{,}400$ yards per pound of merino.

$40 \times 840 = 33{,}600$ yards per pound of cotton.

In merino yarn, we have fewer yards per pound than the yards per pound of the cotton yarn. To use the same number of yards of merino as we have of the cotton yarn, 1½ pounds of yarn is required. In a total of 2½ pounds of yarn, .75 pounds is wool and 1.75 pounds is cotton, or 30 per cent wool and 70 per cent cotton.

In the sweater fabrics, combinations of worsted and cotton, and worsted and woolen are used, the cheaper yarn being plated in behind the better yarn so that the higher grade yarn is always on the face of the fabric. Taking a sweater fabric of the following composition: 3 ends of 3/18's worsted and 2 ends of 2/18's cut woolen. Our first object would be to get the woolen yarn changed into the same system of numbering as the worsted. Two ends of 2/18's would equal 4 1/2's single. The number of the yarn divided by its ply gives the number of the single yarn. To change 4 1/2's woolen into the worsted number, we proceed as in the example previously shown.

$$\frac{4.5 \times 300}{560} = 2.4 \text{ worsted number.}$$

Three strands of 3/18's worsted is also used so that we reduce this to a common number, our combined size of worsted yarn is 2's. This shows that the worsted is heavier than the woolen. The worsted yarn has $2 \times 560 = 1{,}120$ yards per pound while the woolen has $2.4 \times 560 = 1{,}344$ yards per pound. We next desire to find the weight of worsted yarn required to give us 1,344 yards. We could obtain it by direct proportion, as 1,120 : 1,344 : : 1 pound : required weight. The result of this equation is 1.2 pounds, or for every pound of woolen yarn we use 1.2 pounds of worsted. In a total of 2.2 pounds of fabric, therefore, 1 pound is wool, so that the percentage is, $1 \div 2.2 = .45$ or 45 per cent wool and 55 per cent worsted.

Another problem can be illustrated by using the same fabric. The worsted yarn in the fabric cost 95 cents per pound and the woolen yarn cost 65 cents, what is the value per pound of the fabric? We found that we used 1.2 pounds of worsted to 1 pound of woolen.

1.2 pounds of worsted at 95 cents = $1.14

1 pound of woolen at 65 cents = $ .65

2.2 or the total = $1.79.

If 2.2 pounds cost $1.79 one pound would cost 81 cents or 14 cents less than the price of the worsted yarn. This combining of different yarn is used for the purpose of getting a fabric which costs the manufacturer less, but which retains the appearance of a higher priced garment of the same weight.

Another problem which comes up with manufacturers, is when having a yarn of a given size, they want to use another yarn with it to equal a single yarn which is running in the machine. Example:

What number of cotton yarn would be used along with 40's merino, the combined yarns to equal a 16's cotton?

Here we have two numbers given and one unknown. Before we can start we must change the yarns into the same equivalent standard. For convenience, we will change the cotton number into worsted, for merino yarns are numbered on this basis

$$\frac{16 \times 840}{560} = \text{24's worsted.}$$

To find the unknown yarn, we find the difference between these two numbers. The same method that we used to find the difference between two fractions is the method we would use here to get the result wanted. This can be explained in this way: 24's yarn has only 1/24 of the weight of a 1's yarn, and the same with other cotton and worsted numbers.

$$\frac{40 - 24}{40 \times 24} = \frac{16}{960} = \frac{1}{600} \text{ or 60's worsted.}$$

The yarn we want has to be in the cotton standard for we presume that it is a cotton yarn which is wanted. Therefore,

$$\frac{60 \times 560}{840} = \text{40's cotton,}$$

and a 40's cotton used with a 40's merino will be equal in weight to a 16's cotton yarn.

Dyeing, Bleaching and Finishing.

SOME NOTES ON BLEACHING.

BY CHEMICUS.

The oldest method of bleaching, the so-called "grass bleach," is still actually employed for certain classes of textiles, especially for fine linens. This process depends for its bleaching effect upon sunlight and atmospheric oxygen in the presence of moisture, which conditions no doubt result in the formation of ozone, or at least of hydrogen peroxide, and this destroys the coloring matter in the fiber. In practice this process of bleaching, of course, depends very largely on the condition of the atmosphere, which is very variable at different seasons and in different countries. Besides, this process requires a long time in order to produce a good bleaching effect, and on this account it has been found to be impracticable for most purposes of present day work. In order to reduce the time of grass bleaching, Begeman, considering that unbleached cloth has a yellowish color because it reflects the chemically inactive yellow rays of light, thought that by blueing the cloth this influence could be neutralized, and that the cloth would then become subject to the chemically active blue rays of light, which would cause the ozone and hydrogen peroxide in the presence of moisture to more rapidly exercise their bleaching functions. The blue tint was obtained by using a solution of indigo prepared by mixing four pounds of milk of lime with one pound of finely pulverized indigo, and then adding four pounds of copperas (ferrous sulphate). The cloth was first boiled for four hours in a solution of silicate of soda at one degree Be. After this it was well washed and tinted slightly with the blueing solution. It was claimed that by this process the period required for "grassing" could be reduced about half.

In place of exposing on the grass, Schrenier proposed bleaching with the aid of artificially prepared ozone. The process was to use finely divided turpentine to ozonize the oxygen of the atmosphere. The method was carried out in practice by dissolving 125 parts of resin in 250 parts of turpentine, and then adding a mixture of 22 parts of caustic potash, 40 parts of water and 90 parts of hydrogen peroxide. In this manner a clear liquor was obtained and then kept for a week in the dark. This caused the formation of a stable solution called *ozonine*. An emulsion of 1 part of ozonine in 1,000 parts of water was said to be of sufficient strength to bleach the fiber.

Another novelty in air bleaching has been proposed by Muller, and consists in treating the cotton cloth with a solution of caustic soda containing products capable of acting as catalytic agents; for instance, compounds of manganese or cobalt. The process was carried out as follows: Sixty parts of cotton cloth were treated in a vat with 1,000 parts of a 1 per cent solution of caustic soda containing one ounce of potassium permanganate. In order to avoid the formation of oxycellulose, the cloth should be packed in such a manner so that it may be completely submerged beneath the liquor during the operation. The cloth is then boiled in this liquor for two hours under a pressure of two atmospheres, and then a current of air is forced into the vat under a pressure of three to three and one-half atmospheres. When the liquor has acquired a clear, yellow color, which will usually require about twelve hours' time, the process is completed, and the cloth is well washed with water and treated with a ½ per cent solution of sodium bisulphite, for the purpose of removing any hydrate of manganese, after which it is soured, washed and dried. By this means it is claimed that the boiling-out and bleaching can be executed in a single operation. It has also been suggested to add hydrogen peroxide or sodium peroxide to the bath instead of blowing in air under pressure in order to furnish the necessary oxygen for the bleaching.

The most generally employed bleaching agent, however, is chloride of lime or bleaching powder. The ordinary process of manufacture of this material gives an impure product containing 35 to 40 per cent of active chlorine and 60 to 65 per cent of inactive material. A process, however, has been suggested for the manufacture of a concentrated bleaching agent by saturating milk of lime with chlorine gas. The liquor is then filtered, and the solution of chloride of lime is concentrated by evaporation in a vacuum in order to avoid the decomposition of the calcium hypochlorite. By this method the hypochlorite of calcium may be obtained in a crystalline state, and the product will contain from 80 to 90 per cent of active chlorine.

The best American practice at present is to employ liquid chlorine for the production of the bleaching solutions. The liquid chlorine is contained in steel cylinders, from which the gas is released and passed into a solution of soda ash or a solution of mixed soda ash and caustic soda. This furnishes the bleacher with a concentrated solution of sodium hypochlorite, which is used for the bleaching in place of the solution of chloride of lime.

The moisture and carbonic acid in the air rapidly exercise a decomposing action on chloride of lime, which materially affects its bleaching strength. In an endeavor to remedy this defect, Bullier and Maguenne have prepared a solid hypochlorite by compressing a mixture of chloride of lime and crystallized sodium sulphate in the dry state and without employing heat. A double decomposition takes place with the formation of hypochlorite of sodium and sulphate of calcium.

After bleaching with solutions of hypochlorites, it is customary to sour the cloth in a weak solution of hydrochloric or sulphuric acid. Sometimes oxalic acid may be used, but this is not the usual practice. In order to render the bleaching effect of the chloride of lime more active, Lunge has recommended the use of acetic or formic acids as a preliminary treatment before the bath of bleaching powder was given. For the same purpose Beeyrich suggested adding to the bleaching liquor oxalic acid.

In order to remove all trace of chlorine compounds or free chlorine or hypochlorites after the bleaching with chloride of lime, solutions of both sodium bisulphite and sodium hyposulphite have been used. The latter is perhaps the best agent for this purpose. Hydrogen peroxide will also have the same effect. Wachter suggested the combining in a single operation the treatment with hypochlorite and anti-chlor. He recommended the use of 200 parts of

water, 12 parts of chloride of lime and ¼ part of anti-chlor, and after twelve hours adding ½ part of glycerin. This formula, however, would appear to be incompatible, since the addition of the anti-chlor to the solution of the bleaching powder before it has been used for treating the cloth would only have the purpose of neutralizing a part of the hypochlorite and thus rendering the solution of the bleaching weaker. The only legitimate use for the anti-chlor is to neutralize the excess of chlorine in the fiber after the bleaching operation has been finished.

Hypochlorites prepared by electrolysis have been used more or less successfully for the bleaching of cotton. The chief method is to electrolyze a solution of sodium chloride (common salt), and thus obtain a solution of sodium hypochlorite. Such solutions have the advantage over chloride of lime in that they do not contain any lime compounds and are not as liable to injure the cloth in bleaching. A more convenient and more economical method, however, for the preparation of solutions of sodium hypochlorite is to employ liquid chlorine as described, and this method has already been adopted by most of the large bleacheries in America.

Bregeard has recommended the addition of zinc sulphate to the solution of sodium hypochlorite for the purpose of increasing its bleaching action. There have also been methods suggested for combining the action of hypochlorite solutions with hydrogen peroxide, ozone and other oxidizing agents. Such, however, have never amounted to anything of practical value. According to Martin, an advantageous method for the bleaching of linen or jute consists in boiling such fabrics with 8 per cent of caustic soda containing 1 per cent of turpentine, washing, and then working for two hours in a bath of chloride of lime at 2 degrees Be., and containing as an addition 2 per cent of aluminium sulphate in solution. The fabrics are then washed and boiled for two hours in a solution containing 3 per cent of caustic soda and 1 per cent of benzine; washed again and treated for four to six hours in a bath of chloride of lime at ½ degree Be., and containing 0.2 per cent of aluminium sulphate. The cloth is then slightly acidulated and boiled for two hours in 2 per cent of caustic soda and 0.2 per cent of benzine. A third treatment with chloride of lime at ¼ degree Be. is then given, with the addition of 0.1 per cent of aluminium sulphate. The material is finally soured and washed. Just what effect the addition of the small amount of aluminium sulphate to the bath of bleaching powder would have is not quite apparent; it would form a small quantity of aluminium hypochlorite with the consequent precipitation of a corresponding amount of calcium sulphate. Also, the purpose of the addition of benzine to the caustic soda bath is rather imaginary, to say the least.

USE OF HYDROGEN PEROXIDE.

The ordinary process of preparing hydrozen peroxide is to decompose peroxide of barium with sulphuric acid. There is formed a precipitate of barium sulphate, and the solution contains hydrogen peroxide. This product is of great use in bleaching because it has little or no injurious effect on the fiber. For the bleaching of fine cotton goods, where a high degree of quality irrespective of cheapness is the desire, hydrogen peroxide is quite largely employed. For the bleaching of the ordinary line of cotton materials, however, this method of bleaching is much too expensive for commercial use. It is also not as satisfactory for the bleaching of low-grade cotton containing motes and shives when compared with solutions of hypochlorites, irrespective of the matter of cost, as it will not furnish as white and as clean a looking bleach.

Hydrogen peroxide is sold in the form of a solution, generally of a 3 per cent strength, though this may be very variable in different samples. In practice the strength of a bath of hydrogen peroxide may be readily determined by titration with a solution of potassium permanganate. The solutions of hydrogen peroxide are not very stable in character—that is to say, they are liable to lose their strength on keeping. In order to obviate this difficulty, a number of methods have been suggested and are in actual use for the preservation of the strength of the solution. Usually a small amount of phosphoric acid or acetanilide is added to the solution of hydrogen peroxide. Bohn and Leyden have prepared hydrogen peroxide in the solid form by adding to a solution of hydrogen peroxide a quantity of gelatine and glycerin, and then cooling the mixture until a hard, solid mass is obtained. This product remains stable for a long time, and is made active by simply heating to a temperature of 75 to 100 degrees Fahr.

Bleaching with solutions of hydrogen peroxide is generally carried out in a slightly alkaline bath, the material being steeped in the solution over night and then washed. Generally, 1 part of hydrogen peroxide to 75 parts of water is used, and the bath is made alkaline with ammonia.

USE OF SODIUM PEROXIDE.

This product presents the advantage of being somewhat cheaper and of having greater stability than hydrogen peroxide. It is sold in the form of a yellowish-white powder, and when dissolved in water is converted into a solution of hydrogen peroxide and caustic soda. It is ten to fourteen times richer in oxygen than a solution of hydrogen peroxide. It is very hygroscopic in character, and is also attacked by carbonic acid; consequently it suffers rapid deterioration when exposed to the atmosphere. As it produces caustic soda when dissolved in water, when employed for purposes of bleaching it is necessary to add to the bath sufficient sulphuric acid to neutralize the alkali formed. In preparing the bleaching bath it is customary to add the requisite amount of sulphuric acid first and then gradually add the sodium peroxide to the acidified solution, keeping the solution slightly acid in reaction in order to be certain of the fact that all of the caustic soda has been neutralized. In order to render the bath active for bleaching purposes, it is necessary to use it in a slightly alkaline condition, and for this purpose it is brought over to an alkaline reaction by the addition of a small quantity of ammonia or of sodium silicate solution. The more alkaline the bath the more rapidly will the oxygen be liberated. The bleaching action is also increased by elevating the temperature. A convenient solution for bleaching purposes is prepared as follows: 100 parts of water, 1.35 parts of sulphuric acid, and 1 part of sodium peroxide, the liquor being made slightly alkaline with ammonia, silicate of soda, or sodium phosphate. In bleaching with this bath the material is immersed under the liquor which is maintained at about 90 degrees Fahr., and the action allowed to proceed over night. The time of bleaching may be shortened by raising the temperature to 160 degrees Fahr., or by increasing the alkalinity of the solution. After bleaching, the material is washed in a bath containing a small quantity of oxalic acid.

If the bath is to be preserved for further use, it may be stabilized by the addition of sulphuric acid until it is acid in reaction.

USE OF PERBORATES.

Sodium perborate is a bleaching agent of rather recent introduction. It is sold in the form of a crystalline substance and contains about 10 per cent of active oxygen. On dissolving in water, sodium perborate furnishes active oxygen and borax in solution, and the latter itself is of some advantage in bleaching, as it has a mild alkaline action and considerable cleansing effect, and, besides, it has not nearly the same destructive action on the fiber as the caustic soda, which is liberated in the use of sodium peroxide. Bleaching with the use of sodium perborate is carried out in practically the same manner as with sodium peroxide. The use of the perborates in bleaching, especially in connection with cotton materials, is rather limited on account of the relatively high cost of the bleaching agent.

USE OF PERMANGANATES.

Permanganates of potash and sodium have been employed for a considerable time for the bleaching of woolen materials under special circumstances, but they have been of very little interest in the bleaching of cotton goods. It is possible, however, to bleach vegetable materials in some special cases with permanganate of potash, but its use is naturally very limited, as the cost is relatively high, and treatment with this reagent gives a harsh feel to the cotton fiber. Potassium permanganate for purposes of bleaching may be employed in a neutral, acid or alkaline solution; it is usually best, however, to add a small amount of sulphuric acid to the bath containing the solution of permanganate in order to prevent the precipitation of manganese compounds.

In its action on the fiber, potassium permanganate has the effect of a strong oxidizing agent, and the permanganate itself is reduced to the condition of peroxide of manganese, which is precipitated on the fiber as a dark brown compound, and the oxygen which is set free acts as the bleaching agent. In order to remove the brown oxide of manganese from the fiber, the material is passed into a solution of sodium bisulphite, which dissolves the manganese compound and leaves the fiber in a white condition. A thorough washing must follow the treatment with the sodium bisulphite in order to remove all of the latter reagent, which, being of an acid character, will tender the cotton if not completely removed.

According to recent researches of Manzoni on the subject of bleaching with permanganate of potash, the acid solution of the permanganate gives a better bleaching effect than neutral solutions, and with less injury to the fiber; alkaline solutions are quite unstable, and on this account are hardly practical as bleaching agents. Good results are said to be obtained by employing an acid solution containing 0.05 per cent (on the weight of the material being bleached) of potassium permanganate, and steeping the material in the bath for five hours at a temperature of about 80 degrees Fahr.

ORIGIN OF SOME OBSCURE FAULTS IN BLEACHING.

Higgins, in a recent investigation on the cause of certain faults in bleaching linens, found that the occurrence of black yarns in the cloth was the cause. These black yarns were produced by oil and by substances mixed with the oil. When treated with sulphuric acid and potassium bichromate, the linen fiber of these yarns dissolved, leaving black specks. The latter were afterwards found, according to Ulzer and Ziffer, to consist of copper oxide, the copper being derived from the brass parts of the loom which had partially dissolved in the lubricating oil with the formation of copper soaps, and these latter, on boiling, were converted into the oxide of copper. Copper oxide in the bleaching process apparently acts in a catalytical manner, causing an excessive local oxidation of the cloth.

Mercuric chloride employed in the starch as an antiseptic was found to attack a brass mangle bowl; therefore it is recommended that when using solutions of metallic salts for antiseptic purposes, only those of the more electropositive elements should be employed. Briggs, in a later investigation on this same problem, comes to the conclusion that metallic copper, instead of copper oxide, is the cause of the damage which sometimes follows the bleaching of linen. He attributes its presence to the oil becoming charged with copper by the friction of the metallic surface of brass when proper lubrication has been neglected.

PREPARATION OF PERBORATES FOR BLEACHING PURPOSES.

Quite a number of methods have been suggested and patented for the preparation of sodium perborate, all of them having in view the preparation of a stable compound containing a large amount of active oxygen similar to hydrogen peroxide or sodium peroxide.

Girsowald (German patent No. 204,279, of 1907) describes the preparation of sodium perborate by the use of 76.5 parts of commercial borax and 21.6 parts of caustic soda (90 per cent). These two substances are dissolved in water, and there is then added 950 parts of hydrogen peroxide (3 per cent) and 50 to 60 parts of a saturated brine solution. The temperature of the mixture should be kept as low as possible, preferably under 50 degrees Fahr., and the sodium perborate is then crystallized by reducing the temperature to the freezing point (32 degrees Fahr.).

Another German patent, No. 193,220, of 1905, describes the use of 1,560 parts of sodium peroxide dissolved in 3,000 parts of water in the presence of sufficient quantity of ice to prevent any rise in the temperature. Carbonic acid gas is then passed through the solution until all the free caustic soda has been neutralized and converted into carbonate; then there is added another solution containing 1,240 parts of boric acid and 200 parts of caustic soda, with sufficient ice to keep the temperature at about 36 degrees Fahr.

Blumer and Zwickau (German patent application No. 49,641, of 1908) use molecular proportions of sodium peroxide and boric acid in a solution in water at a temperature of 32 to 60 degrees Fahr.

Jaubert (German patent No. 193,559, of 1904) mixes 248 parts of crystallized boric acid with 78 parts of peroxide of sodium, and adds the mixture little by little to 2,000 parts of cold water.

Stolle and Kopke (French patent No. 384,967, of 1907) allow one molecular part of sodium peroxide to react with three molecular parts of boric acid.

It is said that the process of Stolle and Kopke and that of Blumer give the best results with respect to the yield of active oxygen in the product formed. The first furnishes a perborax, or a mixture of perborate and borax, whereas the second furnishes perborate alone.

Practical Problems Discussed by Cotton's Readers

We invite our readers to make use of this department for the discussion of any and all problems arising in the mill or the finishing plant. Questions, answers or letters need not conform to any particular style and will be properly edited before publishing. The editors do not hold themselves responsible for any statements of opinion or fact which may appear in this department unless so indorsed. This department is open to all. Suitable letters are paid for in cash.

A WORD FROM A WORKER.

EDITOR COTTON:

Before me lies a copy of the Birmingham (Ala.) *Age-Herald*, and on page three there appears an article by Charles H. Mandy, headed "Child Labor Day." Mr. Mandy calls attention to the fact that some upstart of a cartoonist in Memphis, Tenn., drew a cartoon depiciting a small and very poorly clad girl operating a machine on which spinning is done, and on the front, in a very conspicuous place, appeared a notice: "Don't waste the machine's time; your value is gauged by the work you make the machine turn off. Keep it at top speed." Now, wouldn't that jar you?

This Mandy fellow ought to have sense enough to know that the cartoonist is making his living by drawing such pictures as this one, and that he doesn't care who he misrepresents as long as he pleases his boss and the public and pulls down a good salary. If Mr. Mandy had been in a cotton mill just one time, he would have recognized this misrepresentation. But you can never get these sensational writers to investigate facts, because it might ruin a chance to write a story and thereby keep them out of the limelight or shy the space writer's fee. But he goes further and endorses the cartoon and its statement. "Neither the cartoon nor statements connected with it are in the least exaggerated; keep the machine at top speed has always been the slogan of the employer of child labor," he states.

I wonder who told Mr. Mandy this important fact? Or whether he was ever in a cotton mill? Did he ever see any signs or notices in a mill that would suggest such an idea as that of the cartoon? Sensible and fair-minded men would investigate and ascertain the facts before they try to enlighten the public on any subject. One can readily see, however, that Mr. Mandy did not do this. People who know anything about a spinning frame know that the speed is regulated by the number of yarn, or regulated to the number of yarn to be produced. Furthermore, every mill owner, manager or superintendent knows that good running work is an asset or drawing card for his respective mill in keeping a good and contented set of operatives and producing a better grade of goods. An excessive "top" speed would be detrimental to each. Therefore, Mr. Mandy and his friend, the cartoonist, show their ignorance of the subject under discussion.

Continuing, he says: "Can you imagine a more pathetic figure than a child of tender years being forced to work at degrading toil?" I would like to say right here that any work which is honest is honorable, and no work that is honorable is degrading. It is largely a matter of viewpoint. For example, I would much prefer a job spinning or doffing in a cotton mill to that of writing misleading statements to be published in any newspaper.

I wonder if this newspaper writer ever did a day's real work in his life? If so, he should try to get laws passed to regulate the class of work with which he is familiar, and let we mill people, about whose work he knows nothing, severely alone. He has shown in this article his utter ignorance of the matter of child labor in the cotton mill and cotton mill people in general, and it is, in my opinion, time for writers of his class to take a permanent vacation. One would get the idea from his article that the mill people are a gang of ignorant, degraded degenerates, who didn't have sense enough to keep out of the fire. That we sent our children into the mill and made them almost break their necks to please mill owners.

I have been in a mill many years, but I have never met a mill owner of that class, and I have met a great many of them. I want to say, further, that if such men owned mills they would be unable to get that kind of labor out of the people who populate our mill villages today. The majority of our people are on an average with any class of laboring people anywhere, and we feel our independence and realize our right to take care of our own children and our own affairs without being dictated to by a newspaper reporter or a gang of female agitators who make their living by creating trouble for other people. The children who work in our mills know how to take care of themselves. You just let some overseer try to put on to a child something that he should not and see how quick the child will "bawl" him out and go home.

If Mr. Mandy would like to meet a good-natured, carefree, honest, intelligent set of people, just let him come into one of our village Sunday schools—a Sunday school presided over by one of those "degraded cotton mill operatives"—and he would hear good reading, good singing, good lessons recited, and he might then realize that here is true worship of God, without style and pomp, it is true, but also without degradation. Our day schools are good, but could be better if the state legislature would furnish more money. The most of the village schools are largely supported by those "iron-hearted, bloodthirsty tyrants" of mill owners. Wouldn't it be a good idea for Mr. Mandy and his crowd to get in behind the state officials about their extravagance and make them give us low-born, degraded cusses more and better schools?

Perhaps I feel rather deeply on this subject, but I am one of the mill operatives. I went into the mill at about ten years of age. My father was a Confederate veteran. His health failed and we were forced to earn a living. Three brothers, five sisters and myself, I being next to the youngest. The cotton mill offered us the best opportunity, and we all went there to work, with the exception of my youngest sister, who worked later. We worked steadily for some time. Then we bought a nice home, and some worked while others went to school. The "boss" paid us every-

thing he promised, and we were all happy again. Also, the "boss" treated us just as nicely as we treated him. Of course, we were deprived of the higher courses in education, but that was not the fault of the mill owner or manager. It was our own misfortune. All of the boys have obtained very good positions and are getting along just about as well as *some* newspaper writers. The mills pay, on an average, as much as other employers of labor, and the work is very light and pleasant.

Any man or set of men or women who try to make it appear that the owners, managers, superintendents or overseers are a set of slave drivers are either ignorant of the conditions or are willfully misrepresenting the facts.

Overseer (Alabama).

SHOULD TEXTILE SCHOOLS HAVE A HUMAN NATURE DEPARTMENT?

EDITOR COTTON:

I think this would be a good department to have if the teacher was one who had acquired wide experience along that line and had made a success of it. Not that I think such a man could teach the boys "human nature," for that is something they have to learn by actual experience and by coming in contact with people under different conditions. But it could be impressed on their minds that this is one of the main points to learn and handle if they wish to be successful. I don't think any graduate of any textile school is capable of filling an overseer's or superintendent's place under four or five years of practical experience, and some of them not even then, as every one does not have the ability to handle help.

This "Human Nature Department" and handling help is one that should be given all the thought possible and threshed out thoroughly, as it is causing lots of trouble today in cotton manufacturing. It seems to me that we are starting backwards when we place the boy in a textile college, and, after getting him through there, put him in a mill for four or five years, and then find out he does not want that kind of work and is not suited to it, and, if he keeps on, may make a failure. But if we put him in a mill first and he shows any disposition to go forward with that kind of work, then would be the time to take the textile course, as he would be getting the practical part and the mechanical and theoretical part at the same time. This may not seem right to some, but if the boy wants to do so he can go to school at night, if the schools are located in the town where he resides; if not, he could take up a correspondence course in some textile college, of which there are many, and which would fit him at an early age in life for the position he is after. This would be better than taking the textile course first and then the practical and human nature part last.

In picking superintendents and overseers, men should be secured who have a practical knowledge of the business, of good moral character, and who are ambitious, and they should also be interested in welfare work, as welfare work will go a long way, if handled right, to straighten out the help question. I believe that welfare work should commerce in the rom where the overseer is and extend to the community around him.

Now, overseers, I am going to do a little "knocking," but it is for the welfare of others that are not yet overseers and never will be, if many of us keep on at the present way of going. I have seen overseers who thought that no one knew anything but them, or was capable of giving orders but them, and what little they did know they were afraid to let anyone else know. I think a second hand should be one who has the qualifications and ambition to become an overseer with the proper training, but this he cannot get if the overseer is going to be the whole show.

I think, after a good working organization has been established, the second hand should then be instructed to make all the changes at starting time and throughout the day, and should be consulted about any changes to take place in the work, and if any suggestions are made by him they should be carried out if they are all right; if not, he should be told the reason why, as, if he has no chance to show his ability, he will become discouraged and not interested in his work. Many a man has been held back from promotion because, in the first place, the overseer failed to look out for the fellow just back of him in teaching him to take his place. That is why I say the second hand should be one who is capable of taking the place of the overseer at any time.

I don't agree with one of the writers in the January issue when he says that the overseer should be the busiest man in the room. If the overseer was the one who did all the hustling and instructing and was busily at work all the time, I would think something was wrong.

Now, overseers, wake up and give the others below us a chance. Don't have them second hands by name and section hands by work. Give them a chance to get their heads up and show their ability, and you will find things will go along better and you will get better results than if you try to do it all yourself. Just see that it is done. I believe in making everyone feel some responsibility toward their work, and not let them think the mill a place in which to spend ten hours a day and draw their pay at the end of the week. If we do this we are fitting others for better positions and going a long way towards the problem of handling help and learning human nature.

H. E. W. (Maryland).

EDITOR COTTON:

I was very much interested in the editorial article and the later comments entitled, "Should Textile Schools Have a Human Nature Department," in the September and January numbers of COTTON.

I am sure of one thing, any man who, as an overseer, or a superintendent, if he intends to be a success, must understand "human nature" and practice what he knows to be right. The textile school of today may take a man or a boy and tell him all about a machine until he knows it from A to Z. Then he may go into the mill and hurry through the departments he thinks the most essential, after which he is considered fitted for a position as an overseer or superintendent. If all men were alike and had a fair amount of intelligence, he might be a success, but unfortunately he meets men who have never had the opportunities some of us have had, and he does not understand such men's nature and disposition. Some word is spoken, or some little action on the part of this superintendent, done unconsciously perhaps, but not considering some man's nature, and there comes a breach that is hard to overcome in the future.

If we are to be successful in the mill today, we must

practice the Golden Rule as near as possible and treat men and women as such and not as machines. Let them feel we sympathize with them. Get to know them better and they will appreciate us the more for it. There is a place where all men are equal and if we show sympathy and consideration for them it will return to us multiplied a great many times. I have had it demonstrated in my own mill experience. I believe I ought to treat men and women and children as I would like them to treat me if our conditions were changed. My experience has taught me that it pays. We are going through this world but once and if we can lift the load a little from the shoulder of any unfortunate brother, we have made a friend. This is just as true in our mill ilfe as anywhere else. I am just foolish enough to want the good will of all who work for me for when that is attained, I shall get the best results both in the quality and the quantity of work, and the people will be happy and contented. Superintendent. (Mass.)

EDITOR COTTON:

"I don't see what the Professor wants me to run this frame for, because when I go into the mill, I am going to be a superintendent. I am not going to run intermediates or fine frames." The above remark was made by a freshman in a textile school and helps, I believe, to answer why many textile graduates make a failure when they enter the mills.

I have been reading with interest your editorial and the different views expressed by others on the question, "Should Textile Schools Have a Human Nature Department," and being interested in the question myself, I have arrived at the conclusion that one of the greatest mistakes made by the textile schools is the acceptance of young boys for students, who are totally unfamiliar with mill conditions and then turning them out to be superintendents or presidents of the mills.

The average freshman student believes that he will be able to step into a superintendent's place upon graduation, and, although he has not had the practical experience and does not understand the details of cotton manufacture, that everything will work out all right for him and that his diploma will be as an "Aladdin's Lamp," so he will only have to lay it out and look at it, or hang it up in his office, to win success.

I do not believe it will be possible to teach "human nature" in any school, because God in his all-wise providence has given each one of us a nature and an individuality peculiar to ourselves. But the student should be taught that the success of the mill rests upon his being able to get and hold the respect and confidence of each man over whom he has control, from the greatest to the least, and to do this his instructors should impress upon him the fact that to understand human nature he must come in personal contact with the mill worker and that he should spend from one to two years in the mill as a common laborer, where he will be able to become familiar with each detail of manufacture from the opening room to the finishing department.

No student should be allowed to leave school with the idea that he is fully equipped to take a responsible position. In no profession can the graduate leave college and step into a responsible position at once and do so successfully. They should leave with a willingness to take the little things first and gradually climb higher. The doctor, when he receives his diploma, does not expect a large practice in a big city, but is willing to build up a practice in the smallest village, until he has proven himself. It is the same with the lawyer; he does not expect the wealthy and influential man to bring his business to him, but is willing to build up a practice with the poor and uninfluential, knowing full well that when he has proved his worth, he will be able to get the business of the man with wealth and influence. And so it should be with all the trades and professions. A man should be willing and expect to make a sacrifice until he becomes thoroughly familiar with the work he has in prospect.

It was only a short time ago that I read an account of a president of a big Northern railroad who required his son after leaving college to work himself up from the lowest position on up the line until he became fully familiar with each part of the work, and then, when the father resigned the son was able to fill his place. It should be remembered, however, that if every textile graduate was to enter the mill as a common laborer and work himself up through the various departments, they all would not make a success, as the ability to manage others is not found in everyone and to be a successful manager does require this ability. Some people are born to rule, while others have to be driven through life, and because a man is a textile graduate does not prevent him from being in the latter class. By being "driven through life," I do not mean to be driven in the sense of a slave driver driving his negroes, but what I do mean is that they have to be shown and told what to do and what not to do.

There are some men in the mills today who will never be anything but common operatives because they have not the energy and ability that it takes to push to the front. Still they are better fitted for a higher place than some others who are filling the better places in every way but one, and that is the most important requisite, viz, the ability to enthuse and manage those with whom they come in contact. To sift the matter down to the bottom, it all depends upon the man himself whether or not he makes a success. You cannot make a silk purse out of a sow's ear, neither can you make a success out of a failure, because each is radically opposed to the other and success or failure for the man who is trained for a certain work, means that he is or is not in his proper sphere.

The textile student may make a failure in the mill and still make a success in some allied industry where his textile training may be put to good account, just as some doctors, while making a failure as a practicing physician, have made success as druggists, but if parents will insist upon sending their boys to the textile schools, whether the boy himself wishes to enter the mill or not, the failure of the boy should rest upon the parent and the boy and not upon the school. For the school is able and willing to do all that is possible to give the student the technical education necessary for success and should not be held responsible if he makes a failure. Practical. (North Carolina.)

WHY NOT TRY IT?

EDITOR COTTON:

I was much interested in what the cotton manufacturers had to say in the January number of COTTON about what I class as one of the best editorials that ever appeared in any textile paper, entitled "Should Textile Schools Have a Human Nature Department?" Even the heads of the different textile schools and the textile departments of col-

leges express themselves as a confession of faith. Read what these men have to say and then turn to the Practical Discussion Department of COTTON, where many valuable suggestions from practical men will be found. Why would it not be a good idea to have what appears in this department monthly read in the lecture rooms of the textile schools and the questions discussed? Sometimes a writer will make a misstatement, which is generally disclosed by some other contributor in a later issue. The instructor would at once recognize such errors, and it would be excellent mental practice for the class, in discussion, to allow them to try to analyze the statements made and prove them true or otherwise. I believe this thought to be worthy of serious attention and discussion.

Superintendent (Mass.).

BUILDING AN EVEN BOBBIN.

EDITOR COTTON:

There are a good many different ways of building a perfect bobbin, one that is well shaped and of good size. Some section hands will not give it the full rack; by this I mean they will not wind the rack to its full length, for fear of the yarn running off at the top of the bobbin. But no matter how coarse the yarn is, or how fast the frames go, they may be given the full length of the rack as long as one understands the bracket which is located on the right hand side of the frame, and which is connected to the builder by a chain that runs over it. Lowering the bracket and turning the nut at the end of the chain towards you means that longer sized bobbins can be used on this certain frame. To build a smaller sized bobbin, push the bracket higher up and turn the nut at the end of the chain away from you. These points are for twisting machines and therefore the rail may be set for either a short or long bobbin.

Here is another example or point which I wish to make clear. Some twister tenders on the sly will clean their machines when in motion. This is very poor practice. For instance, supposing they clean the creel with the frame going, and then go right to work and clean their guide wires, some of that fly or cotton dust that has been on the frames for a few days, or a week, will catch on to the ends running from the spools and run right into the yarn on the bobbins, which will cause bad yarn. The fly that came on the end being dry before coming through the trough and rolls, is now more of a pulp, and some times a bit of this stuff is the cause of a big smash on the frame. I know that the man in charge of the room can not see everything that is going on, but if he knows of the bad work that is being done by having a man clean the frames while in motion, he will stop it, and by doing this he will save as much yarn as possible, which will increase his production at the end of the week. These defective places follow the yarn, and just think of the amount of trouble it will give to unwind a few hundred yards of yarn from 40 or 50 bobbins, if it is discovered within a few minutes after the twister tender has performed this dirty work.

These points are for twisters only. I would like to hear from a few of the men who are interested in this department, and who have charge of twisting rooms, and to have them explain some of their points concerning twisters.

Lewis. (Mass.)

ANOTHER CLOTH ROOM EXPERIENCE.

EDITOR COTTON:

I have been reading with much interest the series of articles now running in COTTON on "Cloth Room Methods and Machines" and was very much impressed by the experience of "Cloth Room" in the December issue. As I have also been a cloth room man of several years' experience in my younger days, I thought perhaps some of my observations might interest readers of COTTON. I have one in mind that most certainly emphasizes one of Mr. Fallins' contentions, as outlined in one of his first articles.

Once upon a time a man was offered, yes really persuaded to take a fair sized cloth room. In order to get him, the management offered a rather large price, a whole dollar more than the job had ever paid before. They did this because they had heard much about him and because their cloth room was so mussed up that they had to do something drastic.

When this man reached the mill, a place and people he had never seen before, he found conditions even worse than he had expected. As he recounted it to me there was nothing about the room that appeared right. The books and records were just about the worst he had ever been up against, although they may have been clear to the man who originated the system and had grown up with it.

Many dollars worth of otherwise good cloth was being cut into rags or put into seconds every day for defects in the finishing alone. In one week he sold to a local merchant an average of one pound of rags to each loom in the mill. This, on 48 x 48 6.25 yard goods is what percentage of loom production? Figure it yourself, you who love figures. This, he assured me, was an average week's sale of rags. These rags, however, did not include the regular waste or the remnants and seconds made.

There was hardly a day when the mail did not bring from one to a number of kicks about mixed styles, short yardage, or something worse. The machinery was also run down and in need of endless repairs.

He told me all these things not to knock the mill, but to make the setting for his story. He saw so much that needed immediate attention that it was necessary to fight hard against the temptation to fall head over heels into the work and thereby lose the advantage of a cool brain for which the successful overseer is paid.

For two weeks this man planned and studied and weighed the various changes he contemplated making, and decided as to the relative importance of the work to be done, keeping notes on each thing as he got it planned. This was his idea of getting hold of the job, but he could scarcely have done more even had he elected differently, as the superintendent was absent all but three days of the two weeks, and no radical changes were allowed in this mill without the sanction of the superintendent. At the end of the two weeks, this man was practically forced out of his position. Why? Simply because he could not change the conditions outlined in this short time unless he had been given full swing.

When a mill engages a high priced man to handle a department, whether it be the cloth room or some other room, this man should be placed in charge, with no strings on him. If such a man is unworthy of this amount of confidence, he is unworthy of the salary he is paid.

Now I hear someone saying, "He is just knocking because he or his friend was discharged, and he is sore." This is not the case, however, as I was merely an observer. I quote this incident, leaving off names and places, simply that I may add my "mite" to what has already been said to stir up interest in a fairer "deal" and a better understanding of cloth room conditions. I do believe my 20 years' experience in cotton mills and also my visits to a great number of Southern mills, justifies me in saying that the cloth rooms of 90 per cent of the mills could be improved in some manner, and that such changes would add a substantial stipend to the right side of the mill's balance sheet. I am equally certain that no such statement can be truthfully made about as large a percentage of any other mill department.

I would be glad to go farther into the details to prove this statement, but as I understand this to be an experience meeting, logic and rhetoric seem out of place. Now will some other mill man with cloth room experience please get up in meeting and have something to say. This field is not to be minimized any longer. The mills are awakening to the need of cloth room improvement.

Observer, (North Carolina.)

THE TIME LIMITATIONS OF TEXTILE SCHOOLS.

EDITOR COTTON:

On the discussion page of your January number appeared an article under the heading, "How to Remove a Stuck Fly Frame Spindle," in which the writer takes a fling at the product of the textile schools because he happened to employ a graduate who could not remove a stuck spindle on a fly frame. He says: "This is one of the small but important little things which should be taught in all textile schools."

Let us take a look at this from another standpoint. From nearly sixteen years' experience in textile schools, the writer finds that the majority of students received know nothing at all about the business. Some have never put a foot inside of a mill, and could not tell a card from a drawing frame. The course at most of the Northern schools covers three years, and at the Southern schools the course covers four years, during which time the students are on class from thirty to forty hours a week for about thirty-six weeks during each year. In this allotted time in the Southern schools the students are given a general education, and only a part of the time is given up to textile work exclusively. At the institution with which the writer is now connected our boys get a good general education in addition to the textile training, the course covering such subjects as algebra, geometry, trigonometry, grammar, rhetoric, literature, mechanical drawing, wood work, forge work, machine shop work, physics, chemistry, mechanics, steam engines and boilers, mill accounting and cost finding, economics, etc., to say nothing of his work in converting raw cotton into finished cloth. From this it will be seen that the students have their minds on many subjects in addition to mastering the art of cotton manufacture—in fact, it is true when the statement is made that we hardly find time during the four years the students are with us to get in all that is deemed necessary to meet the situation.

During the four years the students are here they get about 720 hours' work in carding and spinning, or the equivalent of about 12 weeks in a mill, counting hour for hour. While in the school his time is devoted to a study of the various cotton fibers, the effects of blending and mixing, the cotton best suited for making different classes of goods, and to studying the principles and theory underlying the operation and construction of the different machines necessary for converting raw stock into yarns of different sizes and quality. They are taught as much as possible about the actual running and handling of the machines, the calculations necessary to make any and all changes in speeds, drafts, weights, productions, etc. From this it will be seen that the time is fairly well taken up, and there is little time left for the small, minor, practical details that every man should learn after leaving school. The students here get actual experience in making almost every change possible in the gearing of the machines, constantly changing the sizes, lay-out, etc.

Another point which is not taken into consideration: the machines in a school are nearly always kept in the best working condition, not being allowed to get run down or dilapidated, and consequeuently there is small opportunity for showing the students practical points on fixing. You can't tell a person these things and get them to produce any impression. Like the fellow from Missouri, he has to be shown. For example, the writer, during sixteen years in textile schools, has not seen over three or four tight spindles, has never seen a tight compound shaft, only a few broken bolsters, just a few smashed gears, once or twice a bobbin rail get stuck, a few bung-ups on the cards, etc. In other words, the machinery is kept in good running condition, and the various minor troubles which are constantly happening in a mill simply do not occur. We have troubles, of course, but of a different character.

With the time given, and under the conditions stated, is it possible to turn out a practical, experienced card or spinning room section hand or "fixer"?

A student, after leaving a textile school, should go to work in a mill as an operative, meet the conditions as they are, run the machinery as he comes to it, pick up all the practical points that he can, and in this way finish, so to speak, his education before attempting to get a higher position. The writer, at every opportunity, strongly urges every young man under him to do this, and points out the folly of trying to get a big job before he can handle a small one. If he does not do this, the schools should not be blamed for it, and the man himself is laboring under difficulties. The trouble lies with most of our young men themselves; they work a few months in the mill, get a little training here, there, and everywhere, and then try to get some big job, or feel disappointed because somebody has not come along and picked them out for a nice, soft position with a big salary attached to it. If Williams and perhaps others of the same mind will think over this matter and try to view it from the other side, the writer believes they will see that it is impossible for a student to master all the thousand and one little details of the business in the time given up to it. In addition to the carding and spinning, there are dyeing, bleaching, etc., weaving, designing and cloth analysis, each of which is quite a study itself. Do not judge a man by what he does or does not know, but take into consideration how much he has learned in the time given up to it.

Bart (North Carolina.)

New Machinery and Trade Notes.

TWO USEFUL MILL SEWING MACHINES.

Probably no machine in the mill or finishing plant is in a position to prove itself as much of a time saver and a waste saver as the sewing machine. A sewing machine which will always sew when it is expected to sew and regardless of the quality or condition of the goods to be handled. Two machines of this character are illustrated herewith. Fig. 1 represents a foot-power portable rotary, especially adapted for use in cotton mills, bleacheries, printing and dye works, and similar places. It is designed for convenient handling and moving about where it is not practicable to use a power machine. A sewing machine of this character may thus be made to serve the uses of several operatives and keep several machines in operation at the same time. The cloth is stretched on a large feed wheel by the operator and this feed wheel is connected to the looper shaft as shown, and can be instantly detached by a hand knob over the worm gear. This patent device, it is claimed, avoids all breakage of needles and long and short stitches caused by the slipping of the driving belt. This machine works equally as well on thick or thin goods, wet or dry.

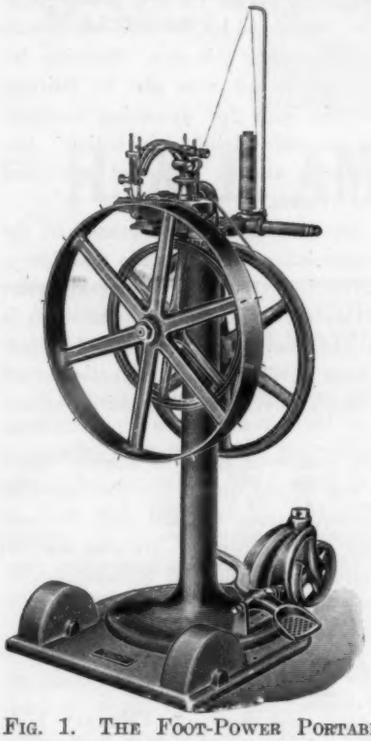


FIG. 1. THE FOOT-POWER PORTABLE ROTARY SEWING MACHINE.

The machine shown in Fig. 2 is built exclusively for the cotton mill. This machine receives the cloth from the loom, unwinds, sews and rewinds the cloth into a roll of 3,000 yards or less. It is designed to operate with little attention and keep the cloth clean and free from wrinkles, makes a straight hard roll for the shearers and brushing machine, or for shipment to the bleachery. This machine may also be equipped with a measuring attachment when desired. Some mills also desire an inspecting board attachment, which can also be furnished. Both of these machines are manufactured by the DINSMORE MFG. CO., makers of mill sewing machines at Salem, Mass. Several other styles of sewing machines are manufactured, and all machine parts are carefully made to standard sizes and any broken part may be easily renewed by a reference to the proper number, in a list which this company furnishes with each machine. A catalog showing all the different styles may be had for the asking.

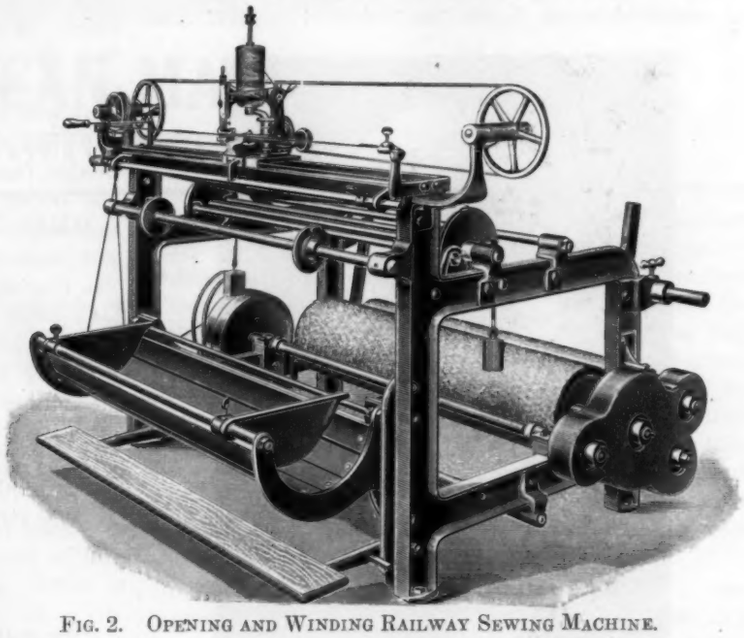


FIG. 2. OPENING AND WINDING RAILWAY SEWING MACHINE.

ATLANTA'S NEW BRUSH FACTORY.

Another example of the growth and development of the manufacturing industries of the South is apparent at the plant of the D. D. FELTON BRUSH COMPANY, of Atlanta, Ga.

This company has been in operation a little over a year and a half, and in that time has developed a complete plant for the manufacture and repair of all kinds of brushes for cotton mills, as well as for other uses.

The proper use of brushes plays an important part in the successful management of a mill, and it is fitting that we should call attention to the fact that there is such an industry so close at hand.

It will, perhaps, be of interest to learn of the many kinds and qualities of stock that brushes are made from, fibers from Japan, Africa, Mexico, and our own Southern states; hair from Italy, France and England; bristles from Russia, Germany, China and India.

The wooden blocks and handles are made at the factory from both hard and soft woods, mostly birch, maple and whitewood. The brush-making industries are adopting automatic machines wherever possible, and this plant is fitted up with several that are most interesting to watch in operation, and most intricate in their construction.

The many operations, from the preparation of the wooden blocks, the treating of the fibers, hair and bristles,

the assembling of the stock, the fastening of the stock in the blocks, thereby producing the brush, the trimming, and the final finishing are extremely interesting in their detail.

Mr. Fitch, the genial manager of the company, is very much enthused over the prospects for the eventual development of a very large plant here, basing this belief upon the steady growth of his business. He invites you to visit their plant when in Atlanta, as he believes such a visit will prove instructive and interesting, and well worth the time necessary for an inspection. They build everything in the line of brushes that are required for every purpose, and will be pleased to submit estimates or give you the benefit of their mature experience in this, their special line of manufacture.

HENRY BRINTON.

Henry Brinton, President of the H. Brinton Company, Philadelphia, died January 30th, at his home at Bala after a brief illness of heart trouble.

He was born February 2nd, 1848, at Christiana, Lancaster Co., Pa., of a line of Quaker ancestry descended from William Brinton, who came to America in 1684. William Brinton received from William Penn a grant of about fifteen hundred acres of land, some of which is still in the Brinton family. It was on this land that the Battle of Brandywine was fought, September 11th, 1777. The

THE LATE HENRY BRINTON.

maternal grandfather of Henry Brinton was Elijah Lewis, one of the three men acquitted of treason after the Christiana riot, where they had refused to help capture a runaway slave when asked by a slave owner and United States marshal. The blood spilled at the Christiana riot has been called the first blood of the civil war.

Henry Brinton received a thorough training as a machinist in the shops of I. Broomwell & Sons, now the Christiana Machine Co. Later he spent about 2½ years with Bement, Miles & Co., Philadelphia. Colt's Armory drew Mr. Brinton to Hartford, Conn., where he worked for a time on the Baxter engine. His next work was on the Branson Knitting Machine at Bellefonte, Pa. The Branson Company failed, and Mr. Brinton went to the Lancaster Watch Co., at Lancaster, Pa., where he obtained experience in fine manufacturing methods which had a great effect on his own designing later. The Branson Co. re-organized, and Mr. Brinton went back to Bellefonte, only to meet another financial crisis. After a further experience at the Lancaster Watch Co., he joined Branson a third time in Philadelphia, and was for some years superintendent of the knitting machine business under the Branson name.

In 1888, Mr. Brinton started manufacturing knitting machines in the partnership of Brinton, Denny & Co. Five years later Mr. Denny sold his interests to J. E. Lonergan, and the firm name became H. Brinton & Co. When the business was incorporated in 1905, the name was made the H. Brinton Company.

Mr. Brinton did much to improve and commercialize automatic cylinder knitting machines of the latch needle type. He held patents on the knitting machine sinker driven from below the stitch level. On ribbers, the Brinton design was revolutionary. The ribber pattern wheel mechanism with moveable pins, developed by Mr. Brinton twenty years ago, has not been changed to this day. Splicing devices for inserting an extra thread were also of Brinton design. A ring in the dial cap for operating multiple feed rib machines was another Brinton invention. Recently a simplified stopmotion and an improved two-speed drive were developed for ribbers.

It is of interest to note that the English branch of the Brinton family also became interested in textile machinery. The carpet manufacturing industry of Kidderminister, England, founded one hundred and eighteen years ago, is still expanding under the name of Brintons, Limited. The English Brintons have developed an automatic carpet loom which produces effects never before possible except in hand made rugs.

Henry Brinton made numerous trips to Europe where his knitting machinery was widely used. He also travelled extensively in this country, having orchard and vineyard interests in Pennsylvania and California. He was married on Oct. 19th, 1874, to Rachael Cawley, of Swedesboro, N. J. His wife, a daughter, and two sons survive him.

EDWARD TREDICK.

We regret to announce the death on February 17th, of President Edward Tredick, of the NYE & TREDICK COMPANY. The business will be continued as heretofore under the management of John C. Brewin, formerly secretary and treasurer.

Among the calendars received at the editorial desk were two from the PHILADELPHIA TEXTILE MACHINERY CO., of Philadelphia, Pa. One of these was intended for the hosiery and knit goods trade and illustrated the styles and uses of the "Proctor" stocking dryers. The other was for general distribution and depicted the various kinds of "Proctor" drying machines manufactured by this company. The calendar pad proper was approximately 12 by 15 inches, which allowed the use of large, plain figures which may be easily seen from a distance. It is a useful and serviceable calendar for the plant.

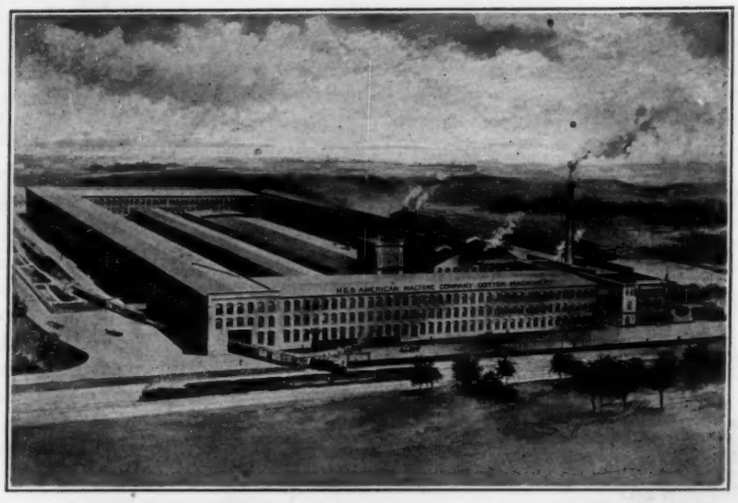
C. E. RILEY, Pres.
Boston Office
65 Franklin Street

Southern Offices
814-815 Empire Bldg.,
Atlanta, Ga.

COTTON MACHINERY

Opening and Picking Machinery

Card Room Machinery



Spinning Room Machinery

Twisters for Wet or Dry Work

With Band or Tape Drive

H. & B. AMERICAN MACHINE COMPANY

PAWTUCKET, R. I.

A NEW IDEA IN NATURE THAT ISN'T "NATURE STUDY."

Many magazines, hundreds of schools and thousands of teachers and parents have tried to instruct children in a knowledge of nature. Yet the really natural child takes to nature for enjoyment like a duck to water.

Why urge the duck? Why compel it to go into the water? When we destroy spontaneity and liberty, we prevent enjoyment and all consequent benefit. "We love the things that love us."

It is, however, not nature nor even natural science as a matter of instruction, as the adult understands it, that the child wants, but the fun of seeing things. Where is the boy or girl that is not pleased by the sight of an elephant or a grasshopper? But when that mammal or that insect must be studied as so much nature or natural science, then is diminished the satisfaction of the watching; and when the watching is made a matter of study, of literature or of science, it becomes still less pleasing unless the observer is naturally studious. Compulsion always removes the zest and blunts the edge. We do best the things that we best like to do. This point of view has been strongly emphasized in Edward F. Bigelow's experience during his fourteen years' editorship of the department of "Nature and Science" of *St. Nicholas*, his correspondence with boys and girls having probably been larger than that of any other editor. He has severed his connection with the *St Nicholas* magazine and will establish in *The Guide to Nature* a department entitled "The Fun of Seeing Things."

Dr. Bigelow is an amateur naturalist. He revels in nature because he likes nature. He believes that young folks make the best companions when they are free from restrictions imposed by parents or teachers. He enjoys their unrestrained spontaneity. He enjoys their letters when the letters have not been revised and made so correct that they are deprived of all originality and heart. He wants young people as they are, not as someone thinks they should be, as he wants nature as she is, unchanged by man's meddling. The tangled thicket is more beautiful and instructive than the formally trimmed hedge. The wild grass is far more beautiful than the closely-shaven lawn; a laughing brook in a secluded ravine is far more picturesque than a ditch with concrete banks.

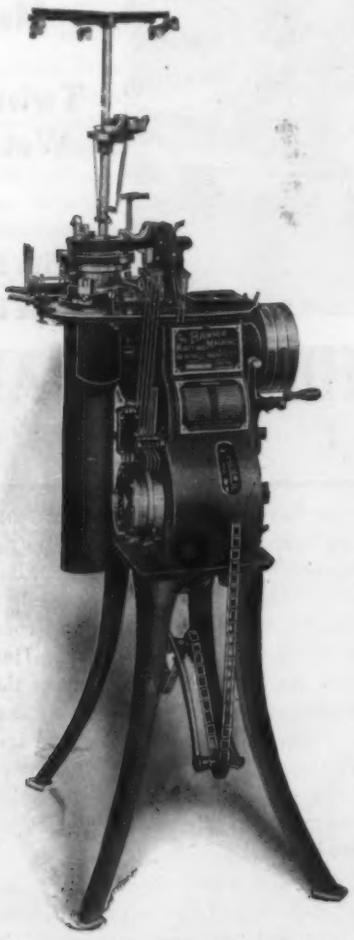
He will conduct the new department, "The Fun of Seeing Things," as he would lead a party of young folks on a ramble. There will be more spontaneity than restraint, more originality than formally trimmed rhetoric.

Boys and girls who wish to share in this real fun may address Dr. Bigelow at Arcadia, Sound Beach, Conn.

It has just been announced that the KEYSTONE LUBRICATING COMPANY, of Philadelphia, has completed arrangements to open a warehouse and office at Savannah, Ga., to afford better facilities for their customers in North and South Carolina, Georgia and Florida. This new service has been made necessary by the constantly growing business in this territory. A complete line of Keystone products will be always in stock so that any requirements may be promptly filled. The office and working force will be in charge of Karl Kologiski, who has been the Keystone representative in this territory for several years.

A NEW HOSIERY MACHINE.

THE HEMPHILL MFG. COMPANY will soon have ready for delivery their new full automatic Banner hosiery machine, equipped with six change of yarn levers that are made of substantial thickness so that there can be porcelain eyes used in them to the very best advantage. They also wish to call attention to their new and novel device for making their machine still more suitable for plating any kind of yarns than it ever has been before. With the new plaiting device, it is not necessary to have the customary amount of tension on the yarn which is to plait. It will therefore, do away with a great many break-downs on account of having too much tension on the yarn. In



THE NEW BANNER HOSIERY MACHINE.

order to insure good plaiting, the Hemphill Mfg. Company have also adopted a single pick for the widening operation in making stockings, which is simple in construction, and positive in its motions. With the simple construction of this pick, they are enabled to increase the speed of their machine on the heel and toe from 15 to 20 per cent faster than heretofore.

They have also made a change in the high splice and double sole mechanism which makes it positive for the yarn lever to draw the yarn in and out on the same needle, thereby making a perfect line, which is a very desirable feature to have in a high grade stocking.

The yarn engaging device which holds the yarns in place has also been improved by making it more positive, and more simple in construction than the present one.

They wish to call particular attention to the fact that they have always made it a practice to have all parts that have to be adjusted from time to time located at the front of the machine. All knitters will recognize this as being a very important point in getting at, and fixing a knitting machine. It will be noticed that they have done away with the connecting wires that were inside the frame to work the yarn change levers, and have adopted a 3/16 inch rod, which is on the outside where it is handy, and which can be adjusted without any trouble whatever.

The main improvements are protected by United States and foreign patents. Over 15,000 machines are in successful operation in the hosiery mills of the United States.

The works of this company is equipped with the latest improved machine tools for the production of the Banner machine, and it is predicted that 5,000 machines will be made during the year 1914.

The new model split-foot machine is reported to be giving the very best of satisfaction to those who have bought them, and the makers strongly recommend this type of machine for the split-foot hosiery trade. The improved machine for making the rib-top with hem, will also be ready for delivery about the first of March. This machine is a rapid producer, being of the double-feed type, and made so the operator is able to put in an extra yarn so as to get the elasticity for the rib-top, and take out the extra yarn when knitting the plain fabric. This is claimed to be a great advantage, and for all classes of wool goods, will do away with the old fashioned method of transferring.

FOURTH NATIONAL TEXTILE EXHIBITION.

As the time for the Fourth National Textile Exhibition to be held in Mechanics' Building, Boston, April 27 to May 2, draws near, it becomes more evident that the show is assuming a wider scope than the most enthusiastic directors hoped for. The exhibits will not be confined to any one particular branch of the industry for there seems to be a movement among the industry as a whole to put its best foot forward at the coming show.

At the previous exhibition in Boston the displays have been made, in most instances, by the cotton branch of the industry. The list of concerns that have contracted for space thus far indicates that the woolen, knit goods and hosiery industry will have equally as large a representation. The commercial engineers department will show a vast number of improved steam and electric power plants and appliances. This particular branch of the exhibition has assumed very large proportions.

On the whole the exhibition ought to be a remarkable one, as during the two years intervening between exhibitions there have been an unusual number of meritorious inventions and a great number of these will be shown in operation. Even though 125,000 square feet of space will be devoted to the show, yet it is clear to Manager Chester I. Campbell, that every particle of floor space will be contracted for a month before the doors open. At this time he states, there are only a few desirable spaces open.

The educational side of the show will no doubt call forth great interest as three textile schools in Massachusetts and another in the South have contracted for space to show the work that is being accomplished in this direction.

Barrett Specification Roofs

For Large Business Buildings

THE St. James Building, Jacksonville, Fla., is built on modern lines. And like almost all first class modern buildings, its 60,000 square feet of roof are covered with a Barrett Specification Roof.

The general acceptance of The Barrett Specification among first class engineers and architects is a highly significant development in the roofing trade. It is a movement which began with the leaders of the profession, who recognized its technical soundness. Accordingly, the inclusion of The Barrett Specification in full in building specifications is rapidly becoming a universal custom.

The Barrett Specification has the advantage of furnishing a uniform and fair basis for competitive bids, together with satisfactory methods for determining the quality of workmanship and materials on the job. Our own experts are usually available to inspect the contractor's work and certify whether or not the Specification has been strictly complied with.

A Barrett Specification Roof will usually last twenty or more years without a cent's worth of repairs. It takes the base rate of insurance. It gives the most service per dollar, its unit cost being less than a quarter of a cent per foot per year of service. Booklets on request.

HYDRONON

The Damp-proofing Paint.

Especially recommended for use above the ground level on the interior of stone, brick or concrete walls to exclude dampness.

Has superior covering capacity and is vastly superior to other paints in its permanence and resistance to dampness. It penetrates into the pores of the brick so that an accidental abrasion does not break the waterproof seal. Furnishes satisfactory base for plaster and keeps the plaster from injury by dampness in the walls.

VELVEX

Creosote Shingle Stains.

Send for the new free booklet handsomely printed in colors, showing the beauty of these stains. Very economical and satisfactory.

SPECIAL NOTE—We advise incorporating in plans the full wording of The Barrett Specification, in order to avoid any misunderstanding. If any abbreviated form is desired, however, the following is suggested:

ROOFING—Shall be a Barrett Specification Roof laid as directed in printed Specification, revised August 15, 1911, using the materials specified and subject to the inspection requirement.

BARRETT MANUFACTURING COMPANY

New York, Chicago, Philadelphia, Boston, St. Louis, Kansas City, Cleveland, Cincinnati, Minneapolis, Pittsburgh, Seattle, Birmingham.

THE PATERSON MFG. COMPANY (Limited)

Montreal, Toronto, Winnipeg, Vancouver, St. John, N. B. Halifax, N. S. Sydney, N. S.

St. James Building Jacksonville, A. J. Kutho Architect, Roofers, Logan Concrete & Eng. Co., Jacksonville

TRADE B MARK

PAPER BUYING ON A NEW BASIS.

Of special importance to exporters and importers of paper is a set of instruments which will enable the paper buyer to determine just what he wants in paper, and to so express his need that there is no room for dispute or misinterpretation.

He can in this way specify his paper needs numerically and after the shipment has been received he can, with a moment's work, ascertain definitely whether or not the paper sent responds in all requirements to that which was ordered. To many a man who uses large quantities of paper, buying it is something of a mystery. He relies upon the feel, the tear and the appearance. The most important quality, the strength of the paper cannot be ascertained definitely. The Ashcroft paper tester enables the buyer to determine the exact strength of paper, and it is accompanied by paper buying specifications, on which to express in figures just the kind of paper he wants. Also the Ashcroft thickness gage shows in thousandths of an inch the thickness of any sample.

THE ASHCROFT PAPER TESTER.

These two instruments take the mystery out of paper buying and put these transactions on a basis on which both buyer and seller are protected. It is claimed that the use of the Ashcroft paper tester will effect a saving of from 10 to 25 per cent in the annual bills for paper, whether paper is used merely for wrapping or for higher grade purposes. But in any event it is evident that an instrument which will enable a purchaser to definitely state what he wants and after the invoice is received to have any employee ascertain whether or not the goods are as ordered, is something that will sooner or later be at the hand of every man who buys paper in any considerable quantity. These instruments are used by large buyers of paper in the United States, Canada, Great Britain and parts of Europe, and are well adapted to the needs of the textile mill manager, who frequently desires to keep in touch with the quality of paper being used in baling his goods, particularly those for export.

"MAKING MUSIC UNDER THE RIGHT ROOF" is the name of a neat and interesting booklet sent out by the BARRETT MANUFACTURING COMPANY, of New York. It carries a subhead "The Aeolian Company and Barrett Specification Roofs." It is illustrated.

CHEMICAL SPECIALTIES FOR TEXTILES.

Among the important and well known companies manufacturing chemical specialties for textiles may be listed the new firm of the JAFFRAY MANUFACTURING COMPANY, with offices and works at 17 Dunham Place, Brooklyn, N. Y. Among the specialties manufactured by this company may be mentioned the following:

Softener number one is said to be especially good for gingham finishing or any class of work where pure starch is used. They do not recommend it for any kind of finishing where epsom salts or any artificial matter is being used.

Softener number two is suitable for back starching or what is known as backfilled work. In a formula which embraces talcum powder or any white fillers such as chalks together with starch, it is usual to use about 25 to 30 pounds of a product of this kind to a 100 gallon mixture. The purpose of this softener being to modify the hardness caused by the amount of starch which is used in the formula and also to prevent sticking on the dry cans.

Nainsook softener is for any kind of pure finishes such as nainsook checks for summer underwear and any such kindred finishes where a soft silky feel is required. It is claimed this product will keep in perfect solution or emulsion in hot water alone without any evidence of separation. This is one of the difficulties in getting a softener outside of a soluble oil (where the odor is often objectionable) to work alone without the aid of starch to keep it in suspension. This should be a desirable product for knit goods and hosiery.

Slasher size is adapted for slasher work where fine warps are made, as it is claimed to have the advantage of penetration which is desirable in this class of work, and, as it is neutral, will not injure the most delicate color when used on colored warps.

Solvene is a one boil bleaching solvent which they are offering to enable bleachers of all kinds of cotton piece goods to produce a pure white thoroughly bottomed and free from any kind of impurities with a single kier boil.

To use, make a solution of 1 to 2 per cent according to the weight of the goods, bring the solution up to 120 degrees F., run the liquor into any machine where there is a good nip roller and saturate the goods, leaving them long enough in a bin to allow proper fermentation to take place. This should be in about 5 hours. Wash thoroughly through a large washer, run the goods into the kier and charge with the usual amount of alkali, from 3 to 4 per cent, according to the weight of the goods (preferably ½ caustic soda and ½ soda ash), boil from 9 to 10 hours and after boiling flood thoroughly with cold water, drain and wash through a large washer, chemic, wash, sour and wash.

They claim if these instructions are closely followed, a perfect ground bleach will result which will dye well and uniformly and for white that it will positively eliminate kier and liquor stains, as it contains ingredients for dissolving starches and also waxes and fats, leaves the pure cellulose after the first preparatory treatment.

Diastase is used for stripping starches and sizings from cotton piece goods before bleaching or where goods are to be refinished or dyed. This product if used properly, cannot, it is claimed, fail to remove all sizing material from the goods, without shrinking or injuring them, leaving the goods in a softer and better condition.

The mode of application is to stir 1 to 1½ pounds of

To the South Pole

with Captain Scott
and

To the North Pole

or thereabouts with
various other explorers

And to All Intermediate Points

has RU-BER-OID gone--
invariably doing what is
claimed for it.

RU-BER-OID
PRONOUNCED
"RU" AS IN RUBY
ALWAYS SPELLED WITH
ONE B.

22 YEARS OF SUCCESS
EVERYWHERE

RU-BER-OID
ROOFING

The Original is still unequaled

There is but one
RU-BER-OID
Pronounced "RU" as in "Ruby" and always spelled with one "B."

There in no rubber in the composition or pronunciation of RU-BER-OID.

THERE IS
NO RUBBER
IN THE COMPOSITION
OR PRONUNCIATION OF
RU-BER-OID

KA-LOR-OID
(Colored Ruberoid)
is the same durable material with the added attraction of beautiful and permanent colors
TILE RED---COPPER GREEN
Send for samples

The Standard Paint Company

100 William Street NEW YORK

diastase per each 100 pounds of cloth or cotton yarn to be stripped into 50 gallons of cold water until in solution, then enter the goods, soaking thoroughly in this solution, let stand for two or three hours, then boil for ten minutes, when all sizing materials will be removed and the goods can be dyed or refinished as the case might be.

This product should also find extensive use in print works, as a color which has been long made up will thicken, and when it is ready to add to the machine it is often found to be too heavy or too thick to run. A small amount of diastase, it is said, will reduce the starch to the desired consistency without affecting the color in any way.

Weighting size is for adding artificial weight to any kind of goods which are treated and finished for the export market. It is intended for any kind of colored work and it is claimed will not injure the fabric or colors. If an excessive quantity is used it would be well to add 10 to 15 pounds of liquid softener to the same mixture, although where only 10 per cent additional weight was wanted it would not be necessary to use anything but the weighting size unless a very soft feel was required.

Detergent is a product for bleaching, cleansing, softening and as a preparation for dyeing raw stock, as well as hosiery and knit goods. It has the effect of cutting any waxes or fats that may be in the stock before treatment. This detergent is claimed to be one of the most powerful solvents on the market.

The staff of experts maintained by this company will be glad to furnish formulas for any kind of textile bleaching or finishing on request.

A SLASHING OIL.

For many years the textile trade endeavored to find some substitute for beef tallow as a softener or sizing compound. Among the many good qualities which such a sizing compound should present may be included in the following: it should not deteriorate or become rancid, no matter how long it may be open for use; it should be perfectly neutral so as not to interfere with dyeing, bleaching or finishing in any manner; it should be so composed as to prevent foaming in the size box around the emersion roll; it should tend to assist the starch in penetrating the yarn; it should be of such a nature as to leave the slasher cylinders clean and free from size; and it should so soften the stiff, harsh nature of the starch as to prevent breakage of the yarn at the separating bars of the slasher, and also prevent chafing on the loom.

A sizing compound which the manufacturers claim will substantiate all of these good points in actual practice is being introduced to the trade under the registered trademark brand of "Slashol." This is especially recommended for slashing, short chain work, and finishing. This oil has heretofore been known as Ribinson's slashing oil, but was recently changed to "Slashol" when the registered trademark was secured. Further information, together with testimonial letters from satisfied users, may be obtained from the manufacturers, WILLIAM C. ROBINSON & SONS CO., 32 South Street, Baltimore, Md.

An exceptionally neat calendar has reached the editor's desk from BIRCH BROS., Somerville Machine Works, Somerville, Mass., manufacturers of textile finishing machinery. This calendar is a reproduction of the well known painting "Waiting," and is ornamental as well as useful.

REDUCE THE WEAVING COST.

In a recent issue of *Cotton Chats*, the DRAPER COMPANY, of Hopedale, Mass., urges upon manufacturers the possibility of increasing production in the weave room by running Northrop automatic looms through the noon hour and at night for a certain length of time, without any weavers at all. Such a suggestion would have been received incredulously a few years ago. That it is given today speaks highly for the labor-saving qualities of the automatic loom.

Regarding the possibility of running Northrop automatic looms overtime, the Draper Company says:

"During this period no weaver should be allowed to work on the looms. Under this condition the machinery alone would run; no operative would work overtime, and yet each one could earn more money; the manufacturer would obtain greater efficiency from his machinery; no law in regard to hours of labor or operatives would be broken; and no labor union could properly object to machinery running more than a given number of hours a day. As to quality, goods from Northrop looms average actually better than similar goods from common looms and in many cases have the preference of buyers.

"When we introduced the Northrop loom, it was designed for the easiest possible fabric, *viz.*, narrow print cloth. At that time weavers could tend about six common looms each, the best having eight in a set. Doubling the number of looms per weaver seemed a great advance and we recommended the early purchasers to establish sixteen looms as a proper number per weaver. Since that time the Northrop loom has proved to be so much easier for the weaver that mills on these goods average twenty-four looms per weaver, and numerous individual operatives run from twenty-eight to thirty-six looms each.

"Some weeks ago a remarkable instance came to our attention where all the weavers in a mill having several hundred Northrop looms were allowed three hours' absence to attend a funeral. During this time the loom fixers took entire charge of the looms, averaging a little over eighty-five looms each; the product of this weave room for the week was practically the same number of yards as under usual conditions.

"A case of this kind gives food for thought to stockholders and officials of mills with equipment of common looms.

"There are also advantages in Northrop looms from the weavers' standpoint. As a rule Northrop loom weavers make higher wages than weavers on common looms. The work is less tiresome; and it does not take nearly as long to learn to weave as on common looms; as a rule weavers call for Northrop in preference to common looms where both are found in the same mill."

The BERLIN ANILINE WORKS, 213 Water Street, New York City, are sending to the trade a color card describing Sulphur Brown C. L. 4 R. and Sulphur Corinth C. L. B., which are the first representatives of a new group of sulphur colors. They claim for these new products extraordinary fastness to bleaching, and a very good fastness to light and washing. A copy of this color card, which also contains dyeing receipts, etc., may be secured for the asking.

GLENLYON DYE WORKS

(Yarn Dept.)

CENTRAL FALLS, R. I.

FRANK A. SAYLES, Lessee

Bleachers and Dyers

OF

Cotton Yarns in Bal-warps and Skeins, Silk and Viscose Silk

SPECIALTIES: COLORS FAST TO BLEACHING, Mercerizing, Laundering, Cross Dyeing and Light. Dyed Novelty Effects in Fast Colors. High Grade Bleaching of Cotton Warps and Skeins. Silk Dyed Fast to Boiling Off and Bleaching.

Insist on Having

"GLENLYON DYED YARNS"

Safest and Most Reliable in the Market.

Write for Shade Card, Information and Guarantee.

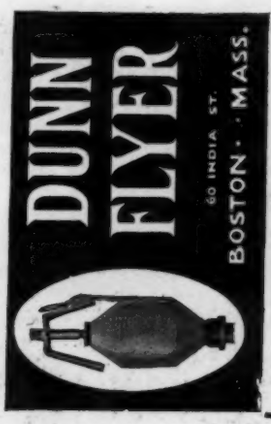
Concerning That Roof

is the name of a book that you ought to read before you do anything about buying roofing for the operators houses. It tells why the first

CORRITGHT
Metal Shingle Roofs

put on 27 years ago are as good as new today and have never needed repairs. Send for it today.

CORTRIGHT METAL ROOFING CO., Philadelphia and Chicago.



PERFECT BALANCE.
NO CHANGING SLOT.
TWIST RETAINED.
A " DOG DAY" FLYER

MORE AND BETTER ROVING

LESS DOFFING, HANDLING, SETTING IN, PIECINGS AND WASTE.

Costs No More
Makes and Saves You Money.

DUNN FLYER CO.
60 India St., Boston, Mass.

The "1912" Cloth Cutting, Folding and Winding Machine

This machine will cut down operating expenses. It does in one operation the work which is now being done in two. It cuts the cloth, folds the edges and rolls them up in one operation, and at all times gets one more strip out of a bolt of cloth than is possible with the old method of cutting. At the same time it measures the bolt of cloth to show the manufacturer whether or not he is getting the number of yards he is paying for. With the high price of cotton to-day every knit goods manufacturer ought to look into this to see if he is getting the maximum efficiency at the least expense. You will find when you come to figure it up in the course of a year that the labor it saves is a big item.

Also have other labor-saving devices and upon application you can get prices and full information on same.

J. A. FIRSCHING, 50 John St., Utica, N.Y., U.S.A

Clinton H. Scovell & Company

Certified Public Accountants
Industrial Engineers

40 Central Street, - - Boston, Mass.

Specialists in Textile Cost Accounting

HAVE YOU TRIED "PUX" SOFTENER?

Acknowledged by expert Textile Manufacturers to be the best and only softener giving entire satisfaction and perfect results. It has no equal for hosiery, cotton and woolen goods.

One trial of "PUX" SOFTENER will satisfy any expert.

Write for Circular.

STANDARD SOAP CO., - - Camden, N. J.

FOR

SCOURING—WASHING

There is nothing which gives you the soft, harmless, thorough and low-priced results of

Alumina Soapalite

THE MINERAL SOAP

The Electric Smelting & Aluminum Co.
LOCKPORT, N. Y. Sole Manufacturers

A COMPLETE CATALOG

TEXTILE BOOKS

will be mailed on request.

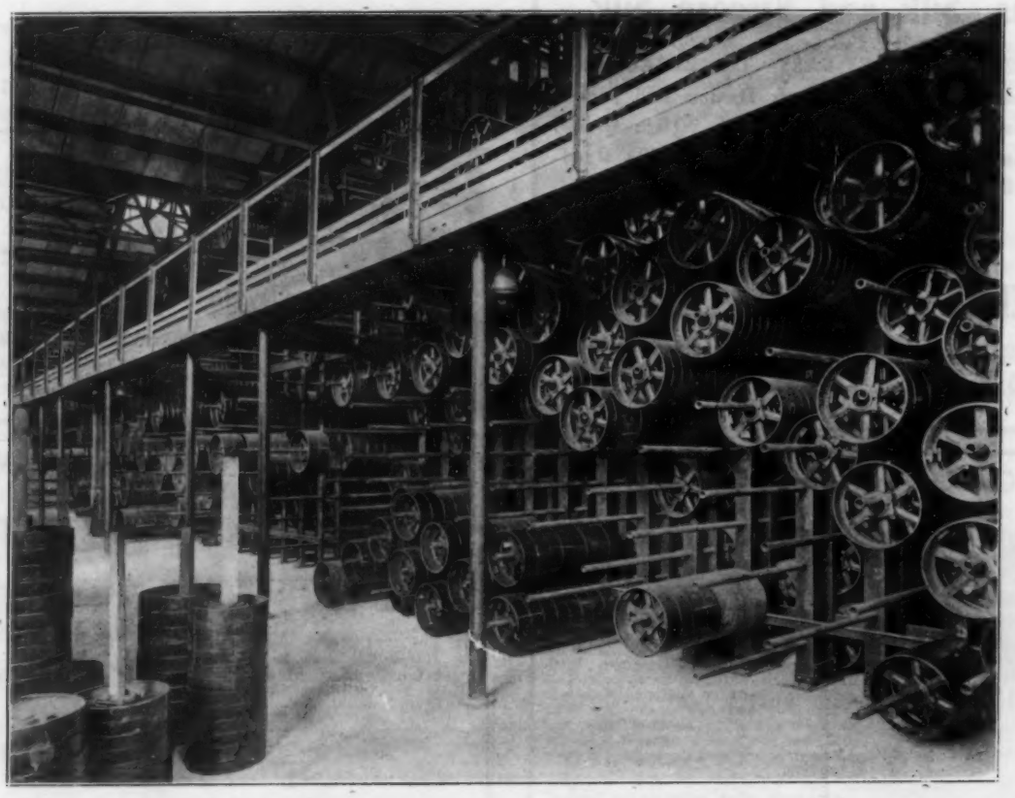
Cotton Publishing Co., Atlanta, Ga.

A NEW PULLEY WAREHOUSE.

Recent improvements at The American Pulley Company's plant in Philadelphia have increased its manufacturing capacity 24 per cent. The new warehouse, which will easily store 40,000 belt pulleys, insures ample facilities for storing stock sufficient to meet increasing demands. This building is absolutely fire-proof. It has brick walls, tile roof, concrete floors, metal racks, metal bins and shelving, and metal window frames. There is more floor space under this one roof than was occupied by the entire "American" plant when established nearly 14 years ago. The second floor of the new building is being used as offices, the former office space being utilized as an addition to the machine shop.

The making of finishing compounds, sizings and starches of all kinds for the textile industry has been the specialty of THE ARABOL MFG. Co., 100 William St., New York City, for years. Experience and scientific methods have enabled them to turn out products to suit any particular needs of the trade, and their goods have an enviable reputation.

J. W. Kidd, superintendent of the Thrift Mfg. Co., at Paw Creek, N. C., has recently issued a pamphlet entitled "Thrift Defined," in which he gives the synonyms of thrift and indicates the attitude of this company toward thrifty operatives seeking employment.



NEW WAREHOUSE OF THE AMERICAN PULLEY COMPANY.

ELECTRICAL MACHINERY FOR COTTON MILLS.

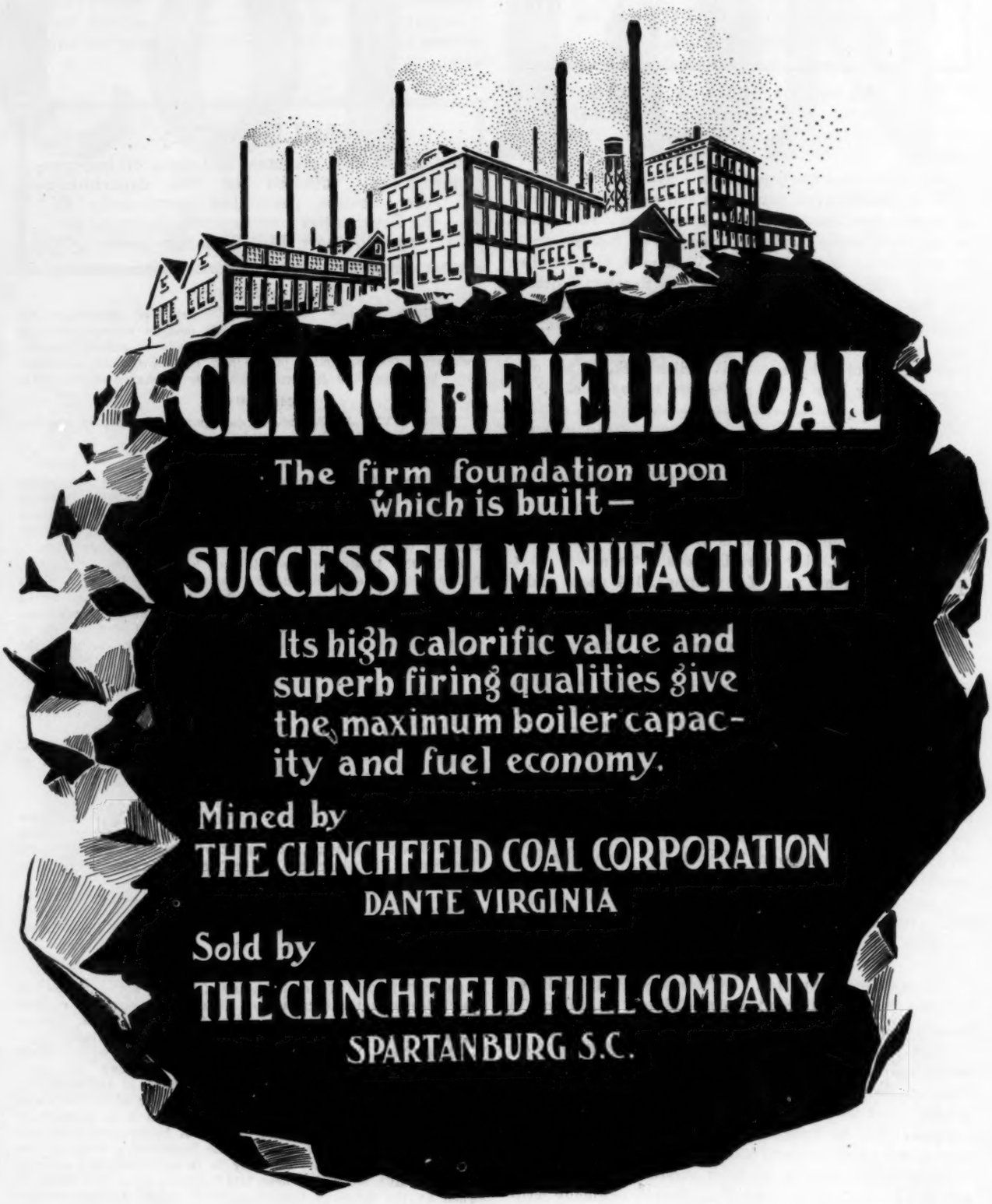
Profile Cotton Mills, Jacksonville, Ala., will place in its power plant a 250 K. V. A. alternating-current generator; Franklin Cotton Mills, Concord, N. C., will add to its electric drive equipment five 20-horsepower motors, with auto switches and a switchboard; Corriher Mills, Landis, N. C., will install for electric drive 11 motors ranging from 2 horsepower to 25 horsepower, switches, switchboards, etc.; Dunn Manufacturing Co., Gastonia, N. C., will add for electric drive 23 motors ranging from 5 horsepower to 35 horsepower, switches, etc.; Proximity Manufacturing Co., Greensboro, N. C., will install five additional 25 horsepower motors and oil switches. All this electrical machinery has been ordered from the General Electric Co., Schnectady, N. Y.

WOOLEN AND WORSTED FABRIC GLOSSARY. 349 pages. Published by Frank P. Bennett & Co., Inc., Boston, Mass. Price $3.00.

This book contains instructions for the manufacture of many varieties and grades of woolen and worsted fabrics. It has numerous illustrations and layouts and should be of value to designers and others interested in these classes of textile fabrics. It also has a brief chapter on cost finding, as well as one on wool fibers.

Never before has the buying public of America been so well able to afford the things they want, and never before has there been so much to purchase.

Education and amusement can be combined by visiting the San Diego exposition in 1915.


CLINCHFIELD COAL
The firm foundation upon which is built—
SUCCESSFUL MANUFACTURE
Its high calorific value and superb firing qualities give the maximum boiler capacity and fuel economy.
Mined by
THE CLINCHFIELD COAL CORPORATION
DANTE VIRGINIA
Sold by
THE CLINCHFIELD FUEL COMPANY
SPARTANBURG S.C.

BOOK REVIEWS

All Books Reviewed Under This Heading May Be Procured From COTTON at the Published Price.

CLASSICS OF THE BAR. By Alvin V. Sellers. Volume Two. 321 pages. Five illustrations. Published by the Classic Publishing Company, Baxley, Ga. Price $2.00 postpaid.

Senator Sellers has prepared a compilation of sketches from the world's great jury trials and selections of forensic masterpieces delivered on these occasions. This second volume contains some splendid examples of forensic oratory as delivered by such men as William J. Gaynor, Ben Hardin, Daniel Webster, George Vest, Sneator Voorhees, Mr. Hadley, Mr. Syester, etc. From those who have read Senator Sellers' first volume, this second volume will receive a warm welcome. To those who have been so unfortunate as not to have seen his earlier work, we can only recommend for them to try and secure a copy of each.

WORK, WAGES AND PROFITS. By H. L. Gantt. Second edition revised and enlarged. 312 pages. 27 illustrations and charts. Published by The Engineering Magazine Co., New York. Price $2.00.

While this is called a second edition of the now well known work by Mr. Gantt, it is so thoroughly revised and so much enlarged, that it really constitutes a new book. The original volume was of 9 chapters, 194 pages and 7 illustrations. The new one contains 12 chapters, 312 pages and 27 illustrations. The charts in two colors show striking results of the task and bonus system over a period of many months and in many establishments. Only the first five chapters of this new edition are identical with the earlier edition. The new material includes extended treatment of the task idea, an enlargement of the discussion of fixing habits in industry, a new chapter on results, and a long practical example of scientific management. Great emphasis is laid throughout on the points which Mr. Gantt in his later experience, has found necessary to emphasize; these include the training of workmen, and the interesting of workmen in their work, an interest that should be both mental and substantial, a pocket interest as well as a head interest. Manufacturers who are interested in the task and bonus method as applied to factory systems will seek this book with renewed interest.

TRUSTS, GOOD AND BAD. By Louis S. Post, published by *"The Public,"* Ellsworth Bldg., Chicago, Ill. Price 15 cents.

This monograph on trusts is Part 4 of a series of optimistic essays on the natural laws of human society by Mr. Post, entitled "Ethics of Democracy." This series was printed about ten years ago, and the present monograph is a reprint from the original book. It is particularly pertinent to the trust problem, particularly so as so much interest is being taken in the trust question in Congress as well as out of Congress. As a monograph originally written when trusts were only beginning to attract public attention, these chapters are especially illuminating now that the "trust busting" campaign is occupying the center of the stage. The keynote of Mr. Post's argument lies in the fact that the question of good trusts or bad trusts depends not upon the form of organization, nor upon the magnitude of organization, but upon the kind of property-interests organized. It is a distinction which should be to students of the trust problem what the mariners compass is to navigation. We believe it will be read with interest by those not already familiar with the pages of the original work.

MILL NEWS

Notices of mill projects, additions or improvements are solicited for this department. Other notices pertaining particularly to the Southeastern section will be found in the Southern Mill Situation review.

MASSACHUSETTS.

LOWELL. A new boiler house, capable of operating 1,000 horsepower and to be equipped with modern stokers, will be erected by the Lowell Bleachery. Work is to be started immediately upon the completion of the new mill now under construction. Engineer John A. Stephens will be in charge of the work.

MISSOURI.

WEBB CITY. R. P. Paulsen is reported to be planning the establishment of a knitting mill at this place.

NEW YORK.

COHOES. The B. & L. Textile Co. has leased the entire mill building, known as Mill No. 1, of the old Victor Knitting Mills plant, for a term of years, and will soon occupy two floors of the building with its plant. Two floors had already been leased to the Capital Knitting Co., which is now in operation.

HUDSON. Union Mills, which owns knitting mills in Catskill, Cechanicsville, Herkimer and St. Johnsville, is to increase its capital stock by the sale of $1,000,000 in 7 per cent preferred stock, which is to be the first lien upon the property of the company. This is in addition to the present capital of $2,500,000, of which $1,000,000 is 6 per cent non-cumulative second preferred, and $1,500,000 common.

OHIO.

CINCINNATI. It is reported that Moses Gordon and associates have recently incorporated as the Gordon Underwear Co., with a capital stock of $10,000.

COLUMBUS. The Columbus Knitting & Manufacturing Co., recently incorporated with a capital stock of $25,000, expect to manufacture various kinds of knit goods.

PENNSYLVANIA.

PHILADELPHIA. It is reported that Frank G. Metz, of the Alpha Knitting Mills, manufacturers of sweaters, etc., at Spring Garden Street, have purchased property at No. 524 and 526 North Sixth Street. This site will be used for the purpose of building an addition to their present plant.

WEST LAWN. The Modern Underwear Co. has purchased the buildings and fixtures of the West Lawn Underwear Co. It will be remembered that this company began operation immediately following the failure of the old firm.

RHODE ISLAND.

PAWTUCKET. McKenzie-McKay Co. has filed articles of association with the Secretary of State. This company expects to engage in the manufacture of cotton fabrics and yarns. George McKenzie, of Pawtucket, R. I., is one of the incorporators.

RICHMOND. The Eastern Finishing Co., with a capital stock of $150,000, has recently been incorporated. Among the incorporators are Wm. L. Barrell and W. H. Adams, of Lawrence.

WESTERLY. L. A. Briggs, managing owner of the Ashaway Woolen Co.; Harry B. Agard, of Westerly, and S. H. Griffiths, a practical lace maker, have filed articles of incorporation for the Ashaway Lace Co. in the offices of the Secretary of State at the city of Providence. This company is to take over and operate the Bethel Mill, which has been idle for some time, and which is owned by the Ashaway Company. They expect to manufacture and sell various kinds of lace.

WISCONSIN.

OCONTO. During the past month the Oconto Knitting Mills has increased its working force by thirty people, and has added some new machinery and additional lighting facilities, which are at present being installed.